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GLOBAL DATA MONITORING REPORT

December, 1996

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis. The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1-2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At RSMC Bracknell, for synoptic stations at or below a height of 500 metres, reported mean sea-level pressure is used in the statistics. If this is unavailable the mean sea-level pressure is calculated from the reported station-level pressure and temperature.

For synoptic stations above 500 metres, the mean sea-level pressure is calculated from the reported station-level pressure and temperature, or, if these are not available the height of a standard pressure-level (e.g.: 850 hPa or 700 hPa). If neither of these are available, the reported mean sea-level pressure is used.

Some stations vary their reporting practice according to the observation hour (e.g.: some stations in the CIS report both mean sea-level and station-level pressure at 00 & 12 UTC, but only mean sea-level pressure at 06 & 18 UTC). For monitoring purposes, reported mean sea-level pressure is stored separately from that calculated from station-level pressure or height of a standard pressure-level. Only statistics for the preferred method (see above) are presented in this report, and so for certain high-level stations, such as those from the CIS, approximately half of the number of observations actually received will appear in the statistics.

Aircraft observations

TABLE 4 contains a list of statistics calculated from data received from all airline carriers.

Figure 3 shows 10 degree lat/long box average numbers of AIREP/ASDAR reports received per day throughout the month at Bracknell and assimilated into model runs in the layer 70-500 hPa. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4-7 show wind statistics for AIREP/ASDAR in the layer 70-500 hPa. Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-27 show satellite mean observation-background temperature differences for NOAA-12 soundings at 500 km resolution and figures 28-30 show the same statistics for NOAA-14. Data are plotted where there are > 30 observations in a 10 degree lat/long box.

N.B. 500 km SATEMs are no longer assimilated into the UKMO global Unified Model. Both 500 km and 120 km SATEMs were replaced on 16th April 1996 by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS (from NOAA-12 and NOAA-14).

Figure	Layer (hPa)
25/28	850-1000
26/29	100-300
27/30	30-50

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area
10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

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Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 has been replaced by statistics for GOES-8 and GOES-9.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: December, 1996

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from Bracknell global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored :Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)
:25 m s^{-1} (vector wind)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.|bias| ≥ 4 hPa (pressure),
≥ 5 m s^{-1} (wind speed),
≥ 30 degrees (direction).

2.SD ≥ 6 hPa (pressure),
≥ 80 degrees (direction).

3.PGE ≥ 25

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
BHFR	ALL	MSLP	SUR	22	5	23	6.6	-1.7	6.9
CYGR	ALL	MSLP	SUR	27	16	59	4.2	-6.8	8.0
C6FA6	ALL	MSLP	SUR	57	0	0	1.8	-5.6	5.9
C6IL3	ALL	MSLP	SUR	22	0	0	1.4	10.7	10.8
C6JT	ALL	MSLP	SUR	21	0	0	1.5	4.6	4.8
C6LI6	ALL	MSLP	SUR	65	0	0	1.4	7.0	7.1
C6QK	ALL	MSLP	SUR	40	0	0	1.4	4.1	4.3
DEGY	ALL	MSLP	SUR	38	0	0	1.7	-4.5	4.8
ELRE5	ALL	MSLP	SUR	69	1	1	1.4	7.7	7.9
ELSU8	ALL	MSLP	SUR	57	0	0	2.9	6.1	6.7
EUJV	ALL	MSLP	SUR	42	1	2	3.7	7.5	8.3
KPTB	ALL	MSLP	SUR	26	0	0	1.2	4.4	4.5
LAWR2	ALL	MSLP	SUR	40	0	0	1.8	4.1	4.5
LAXS2	ALL	MSLP	SUR	106	0	0	1.3	6.7	6.8
NODO	ALL	MSLP	SUR	54	0	0	0.9	7.8	7.9
OXRO2	ALL	MSLP	SUR	67	4	6	1.9	-4.6	5.0
OZBW6	ALL	MSLP	SUR	61	0	0	1.6	4.1	4.4
P3BA7	ALL	MSLP	SUR	71	2	3	1.6	6.9	7.1
P3XM4	ALL	MSLP	SUR	25	0	0	1.1	-4.8	4.9
S6CL	ALL	MSLP	SUR	58	0	0	1.1	5.7	5.8
UCJV	ALL	MSLP	SUR	44	0	0	1.0	-6.3	6.3
UNRZ	ALL	MSLP	SUR	21	0	0	2.2	-4.0	4.6
USNN	ALL	MSLP	SUR	50	0	0	1.6	-4.3	4.6
UVJA	ALL	MSLP	SUR	21	0	0	2.4	-4.7	5.3
UVTH	ALL	MSLP	SUR	20	4	20	3.5	-4.4	5.6
VCTV	ALL	MSLP	SUR	26	13	50	6.9	-6.3	9.3
VOPM	ALL	MSLP	SUR	43	43	100	0.0	0.0	0.0
VRUR6	ALL	MSLP	SUR	70	0	0	2.0	4.0	4.5
V2SA	ALL	MSLP	SUR	31	7	23	1.8	-12.5	12.6
WA5307	ALL	MSLP	SUR	49	0	0	2.4	-4.0	4.6
WE4879	ALL	MSLP	SUR	42	0	0	1.3	-4.0	4.2
ZCAX3	ALL	MSLP	SUR	29	0	0	1.6	5.4	5.6
3ESE9	ALL	MSLP	SUR	39	0	0	3.4	5.0	6.1
3EWJ9	ALL	MSLP	SUR	20	0	0	0.7	5.0	5.0
3FAQ3	ALL	MSLP	SUR	28	0	0	2.1	4.8	5.2
3FZW	ALL	MSLP	SUR	24	0	0	1.5	5.0	5.3
9VIH	ALL	MSLP	SUR	57	0	0	1.2	-5.0	5.2
WIND SPEED									
C6CS2	ALL	SPEED	SUR	20	1	5	8.0	5.5	9.7
ELHR	ALL	SPEED	SUR	22	0	0	3.1	5.5	6.4
ELRR5	ALL	SPEED	SUR	23	0	0	4.9	5.1	7.1
FNYT	ALL	SPEED	SUR	30	0	0	4.0	5.0	6.4
FNZD	ALL	SPEED	SUR	81	0	0	4.1	5.8	7.1
JFYU	ALL	SPEED	SUR	21	0	0	5.3	5.4	7.6
KNIJ	ALL	SPEED	SUR	37	0	0	5.5	5.4	7.7
PFCZ	ALL	SPEED	SUR	54	1	2	6.2	5.1	8.0
PJRJ	ALL	SPEED	SUR	21	0	0	6.9	7.8	10.5
PJVY	ALL	SPEED	SUR	39	2	5	4.4	8.2	9.3
TSLN	ALL	SPEED	SUR	88	1	1	3.3	5.7	6.6
UBLX	ALL	SPEED	SUR	23	1	4	3.4	5.0	6.0
VRRY	ALL	SPEED	SUR	33	1	3	6.0	8.0	10.0
3EET9	ALL	SPEED	SUR	25	0	0	2.8	-5.4	6.1
3EQM9	ALL	SPEED	SUR	24	3	13	7.3	6.5	9.8
3FDZ5	ALL	SPEED	SUR	30	0	0	3.0	5.0	5.8
3FTW	ALL	SPEED	SUR	29	1	3	2.8	-7.0	7.5
9KLT	ALL	SPEED	SUR	52	0	0	7.1	5.6	9.1

WIND DIRECTION

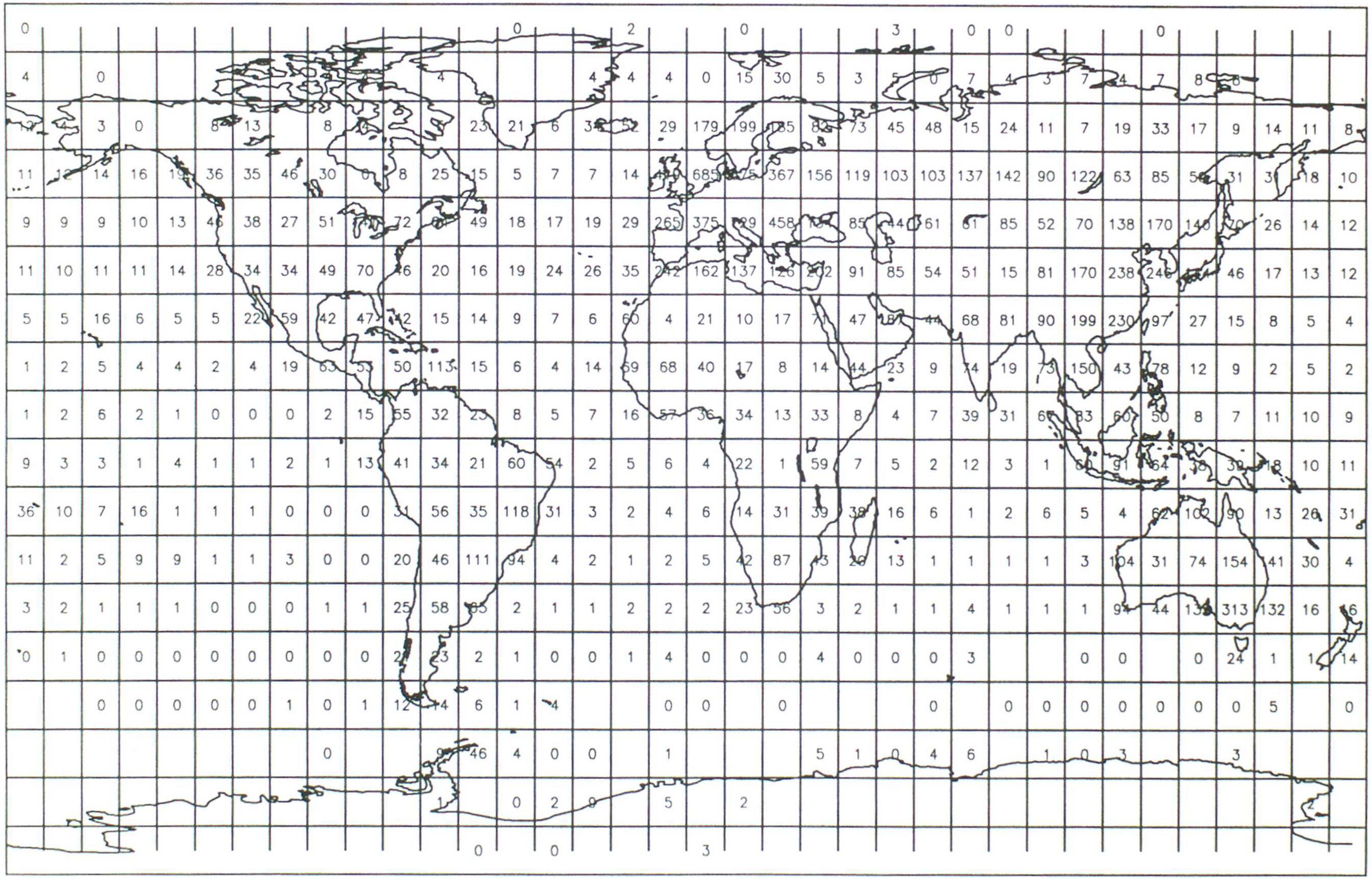
IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
D5XH	ALL	DIRN.	SUR	24	0	0	40.9	-36.5	54.8
ELMF9	ALL	DIRN.	SUR	51	0	0	41.6	37.7	56.1
VRUR6	ALL	DIRN.	SUR	56	0	0	44.3	41.1	60.4
46027	ALL	DIRN.	SUR	81	0	0	29.4	-34.0	44.9
46045	ALL	DIRN.	SUR	31	0	0	85.9	-51.9	100.4
46053	ALL	DIRN.	SUR	53	0	0	59.2	-44.1	73.8
46054	ALL	DIRN.	SUR	81	0	0	38.9	-32.2	50.5
46131	ALL	DIRN.	SUR	72	0	0	63.5	-31.4	70.8
46181	ALL	DIRN.	SUR	80	0	0	40.8	-49.0	63.8
51003	ALL	DIRN.	SUR	32	0	0	31.5	-52.5	61.2
52001	ALL	DIRN.	SUR	21	0	0	89.7	-81.3	121.1
62126	ALL	DIRN.	SUR	94	0	0	27.5	62.5	68.3

AVAILABILITY – SHIP/SYNOP – DECEMBER 1996 FIGURE 1

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

TOTAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 18515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11 12 14 16 19 36 35 46 30 0 8 25 15 5 7 7 14 685 367 156 119 103 103 137 142 90 122 63 85 56 31 31 18 10
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1 0 2 5 2 2
0 0 3

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: December, 1996

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoys.
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa). :Wind speed (m s^{-1}). :Wind direction (degrees).
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the observation is veered to the background.**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa :25 m s^{-1}	(pressure) (vector wind)

SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.$\lvert$bias$\rvert$	≥ 4 hPa	(pressure),
		≥ 5 m s^{-1}	(wind speed),
		≥ 30 degrees	(direction).
	2.SD	≥ 6 hPa	(pressure),
		≥ 80 degrees	(direction).
	3.PGE	≥ 25.	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
23947	-3.9	99.0	ALL	MSLP	SUR	32	32	100	0.0	0.0	0.0
31521	-11.9	-37.6	ALL	MSLP	SUR	160	72	45	0.7	-2.1	2.2
44617	46.2	-24.7	ALL	MSLP	SUR	305	76	25	6.2	-1.3	6.4
44923	59.0	-53.9	ALL	MSLP	SUR	268	114	43	1.9	0.2	1.9
46912	36.6	-137.2	ALL	MSLP	SUR	223	80	36	8.1	-5.4	9.8
54916	-52.7	-171.7	ALL	MSLP	SUR	21	21	100	0.0	0.0	0.0
55516	-15.6	101.2	ALL	MSLP	SUR	315	0	0	1.1	-4.1	4.2
56516	44.7	-63.6	ALL	MSLP	SUR	52	52	100	0.0	0.0	0.0
WIND SPEED											
44513	45.4	-48.1	ALL	SPEED	SUR	191	0	0	2.8	-6.7	7.2
44776	51.8	-38.8	ALL	SPEED	SUR	425	1	0	6.1	-7.2	9.5
46558	33.6	-136.4	ALL	SPEED	SUR	66	0	0	3.3	-7.8	8.5
52539	19.2	117.9	ALL	SPEED	SUR	100	0	0	1.9	-6.8	7.1
WIND DIRECTION											
64516	72.7	-4.0	ALL	DIRN.	SUR	53	0	0	24.4	-120.2	122.7

AVAILABILITY – DRIBU – DECEMBER 1996
MAIN HOURS ONLY
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
TOTAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 4792

FIGURE 2

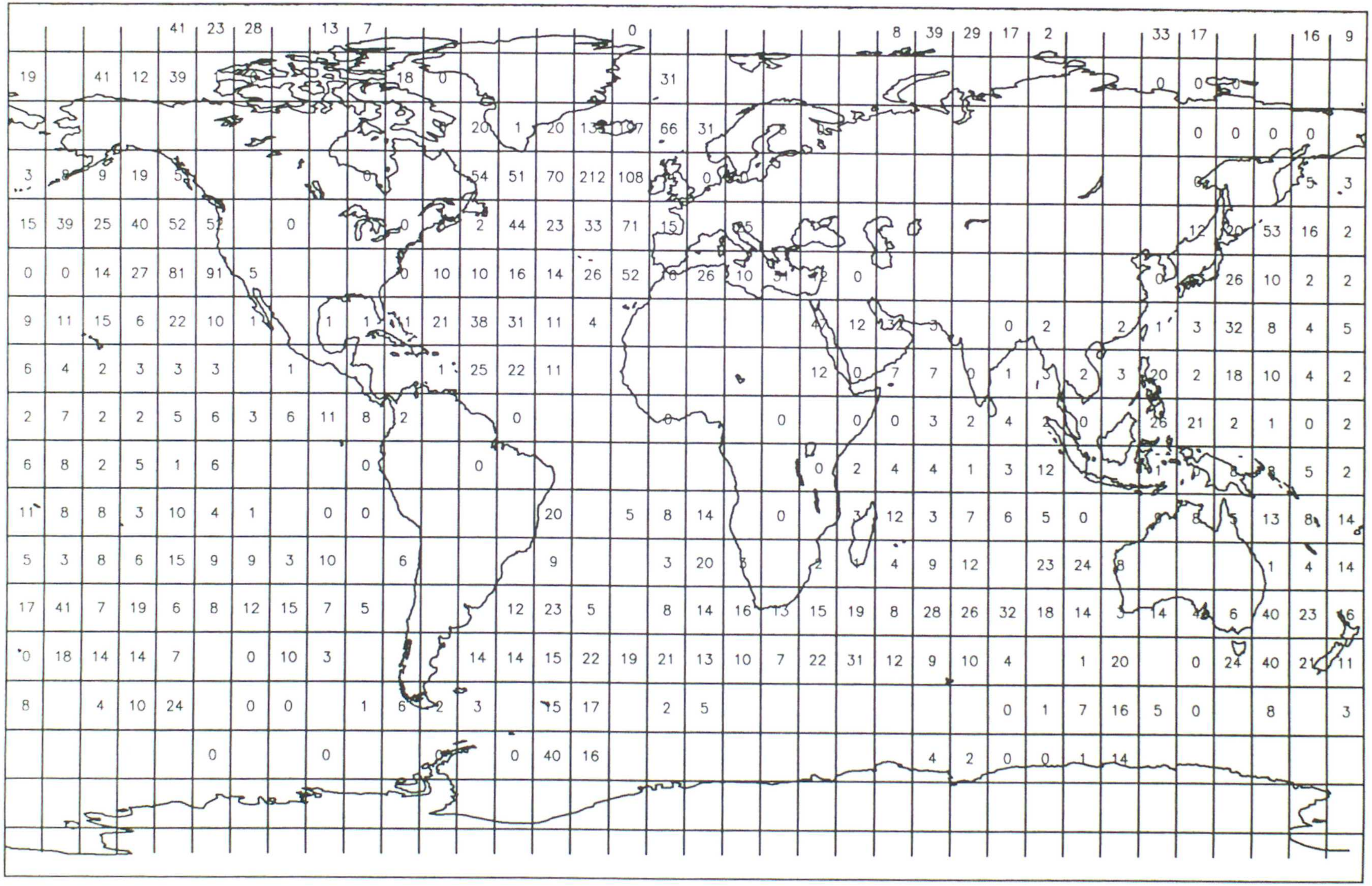
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TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: December, 1996

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.¦bias¦	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60445	36.2N	5.4E	1081	S8	109	2	2	0	0.9	4.6	4.7
60468	35.6N	6.2E	1052	S8	115	115	100	0	0.0	0.0	0.0
60511	35.3N	1.4E	1127	S8	107	107	100	0	0.0	0.0	0.0
60535	34.7N	3.3E	1144	S8	81	0	0	1	1.1	-6.7	6.8
60571	31.6N	2.2W	773	S8	109	0	0	0	1.1	-4.9	5.0
60670	24.6N	9.5E	1054	S8	105	0	0	99	1.7	8.0	8.2
63330	13.5N	39.5E	2212	MS	29	0	0	0	0.7	-6.1	6.1
63333	11.1N	39.7E	1916	MS	44	0	0	0	1.1	7.0	7.1
63402	7.7N	36.8E	1577	MS	37	0	0	0	1.6	-10.9	11.0
63451	8.7N	39.0E	1876	MS	43	0	0	0	1.5	-4.7	4.9
63453	8.8N	39.8E	1062	S	28	2	7	0	1.9	12.2	12.3
63478	5.1N	44.6E	320	MS	34	0	0	0	0.8	6.3	6.4
68014	19.6S	18.1E	1411	S8	88	0	0	59	1.4	-5.2	5.4
68396	26.5S	31.3E	641	S	56	0	0	0	1.1	4.1	4.2
68442	29.1S	26.3E	1354	S8	104	0	0	0	1.4	-4.9	5.1
68752	32.8S	27.4E	524	S8	73	0	0	0	1.0	-7.5	7.6

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
24266	67.6N	133.4E	138	MS	86	0	0	13	2.4	4.1	4.8
24382	66.4N	143.2E	196	MS	58	0	0	9	2.7	6.8	7.3
24671	63.9N	135.9E	402	M	99	20	20	95	2.4	11.1	11.4
25703	62.9N	152.4E	205	MS	120	0	0	13	2.5	4.0	4.7
30320	56.9N	105.7E	669	MS	54	0	0	35	2.1	-4.0	4.5
30554	54.5N	113.6E	995	MS	60	0	0	2	1.6	8.8	8.9
30664	53.5N	115.6E	811	MS	26	0	0	0	2.2	-5.0	5.5
30673	53.8N	119.7E	625	MS	58	0	0	22	2.3	-4.5	5.1
30758	52.1N	113.5E	671	MS	60	0	0	0	1.8	-4.1	4.5
30764	52.6N	115.2E	646	MS	47	0	0	0	1.6	-5.5	5.7
30777	52.2N	117.7E	525	MS	30	1	3	0	1.8	-4.5	4.8
30961	50.9N	115.6E	640	MS	55	0	0	0	2.0	-4.7	5.1
30965	50.4N	116.5E	676	MS	55	0	0	0	2.4	-4.2	4.8
30967	49.9N	115.8E	623	MS	55	0	0	0	2.4	-4.8	5.4
31123	57.8N	130.9E	255	MS	54	2	4	35	2.9	5.9	6.6
31263	54.7N	130.5E	464	M	86	0	0	33	2.5	4.6	5.2
31474	51.6N	133.3E	384	MS	117	0	0	50	3.8	5.6	6.8
31532	50.9N	132.3E	272	MS	111	0	0	37	2.5	5.3	5.9
35173	51.6N	69.8E	620	MS	21	21	100	0	0.0	0.0	0.0
40701	39.3N	44.4E	1470	MS	94	0	0	0	1.3	7.6	7.7
40743	36.2N	57.7E	941	MS	116	1	1	5	1.3	-4.2	4.4
40762	35.3N	59.2E	1333	MS	116	31	27	0	1.0	-13.4	13.4
40763	35.2N	58.5E	1060	MS	48	0	0	0	1.6	-5.2	5.4
40783	32.4N	49.7E	1972	MS	96	1	1	0	1.5	-6.1	6.3
40789	33.8N	55.1E	921	MS	82	1	1	1	1.4	9.8	9.9
40798	32.3N	50.9E	1991	MS	87	0	0	66	1.4	-7.5	7.6
40836	30.8N	51.7E	1880	MS	89	3	3	0	1.6	9.4	9.5
40859	29.0N	53.7E	1383	MS	88	2	2	0	1.6	9.7	9.8
41254	23.1N	57.7E	1755	S8	88	88	100	0	0.0	0.0	0.0
41396	16.0N	48.9E	700	M	27	0	0	0	1.9	7.7	7.9
41466	13.7N	44.1E	1385	8	31	1	3	0	1.1	-6.6	6.7
44239	48.8N	103.6E	1208	MS	78	0	0	3	1.7	-4.8	5.1
44416	28.6N	81.6E	720	MS	51	2	4	4	2.1	4.9	5.3
44477	27.0N	87.4E	1445	S8	42	42	100	0	0.0	0.0	0.0
47022	40.8N	128.2E	1206	S	101	1	1	17	1.5	4.2	4.5
51288	45.4N	90.5E	1651	S	120	0	0	36	1.9	-4.3	4.7
51334	44.6N	82.9E	321	M	121	9	7	76	3.5	8.0	8.7
51379	44.0N	89.6E	794	M	120	0	0	12	2.7	5.9	6.5
51495	43.5N	91.6E	874	M	119	0	0	34	3.7	6.4	7.4
51573	42.9N	89.2E	37	MS	123	0	0	19	4.0	4.5	6.0

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
51730	40.5N	81.1E	1013	M	121	0	0	4	2.1	4.4	4.9
51818	37.6N	78.3E	1376	M	121	0	0	47	3.5	5.5	6.5
52378	41.4N	102.4E	960	M	120	0	0	26	2.5	5.5	6.0
52602	38.8N	93.4E	2734	S	121	0	0	0	1.9	-4.1	4.5
53083	44.6N	114.2E	1183	M	123	0	0	78	2.7	6.7	7.2
53352	41.7N	110.4E	1377	M	120	0	0	59	3.0	6.4	7.1
53480	41.0N	113.1E	1416	M	117	0	0	30	3.7	4.4	5.7
53487	40.1N	113.3E	1069	M	121	1	1	8	3.0	4.2	5.2
53502	39.8N	105.8E	1033	M	121	0	0	39	2.6	5.0	5.6
53593	39.8N	114.6E	910	M	121	0	0	23	2.8	4.5	5.3
53705	37.5N	105.7E	1185	M	121	0	0	29	2.4	6.2	6.6
53764	37.5N	111.1E	951	M	123	0	0	7	2.4	4.9	5.5
54386	41.4N	128.2E	1018	M	121	0	0	27	3.0	5.1	5.9
56144	31.7N	98.6E	3204	S	116	1	1	3	2.3	-4.7	5.2
56287	30.0N	103.0E	629	M	119	0	0	45	2.0	5.4	5.8
56385	29.5N	103.3E	3049	S	122	1	1	37	1.8	-4.4	4.8
56444	28.5N	98.9E	3488	S	118	118	100	0	0.0	0.0	0.0
56462	29.0N	101.5E	2994	S	118	1	1	1	2.6	8.5	8.9
57006	34.6N	105.8E	1143	M	120	0	0	23	2.7	6.7	7.2

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	128	M	34	0	0	0	0.9	-5.7	5.8
82326	3.8S	62.1W	49	MS	74	0	0	1	2.5	4.1	4.8
82704	7.6S	72.7W	170	MS	73	0	0	0	2.1	-4.0	4.5
82975	9.1S	44.1W	331	MS	44	0	0	20	1.0	5.2	5.3
83214	10.3S	54.9W	285	MS	50	1	2	8	3.7	-4.9	6.1
83235	12.4S	46.4W	660	MS	78	0	0	0	0.8	6.5	6.5
83295	13.4S	39.9W	755	MS	37	1	3	89	1.8	-4.9	5.2
83319	14.7S	52.4W	315	MS	54	0	0	2	1.8	-4.5	4.8
83332	14.1S	46.4W	950	MS	80	21	26	0	0.7	13.7	13.7
83408	14.3S	43.8W	556	MS	63	2	3	2	1.1	11.0	11.1
83423	16.7S	49.3W	729	MS	85	1	1	0	1.0	-5.4	5.5
83488	17.8S	42.9W	1097	MS	77	77	100	0	0.0	0.0	0.0
83531	18.6S	46.5W	896	MS	74	2	3	0	1.0	-6.5	6.6
83538	18.2S	43.6W	1297	MS	75	0	0	32	1.3	-11.0	11.1
83543	18.8S	41.9W	277	MS	47	0	0	4	2.0	6.6	6.9
83587	19.9S	43.9W	850	MS	76	0	0	0	1.0	-7.7	7.8
83689	21.3S	43.8W	1171	MS	60	2	3	2	0.8	4.5	4.6
83773	23.1S	48.9W	793	MS	38	0	0	0	1.1	-5.1	5.2
83836	25.5S	50.6W	837	MS	79	0	0	1	1.0	-4.5	4.6
83916	28.2S	51.5W	806	MS	71	0	0	0	1.1	-5.1	5.2
84401	5.2S	80.6W	55	MS	102	0	0	0	1.5	5.4	5.6
84425	5.9S	76.1W	184	MS	94	0	0	3	2.1	4.2	4.7
84455	6.5S	76.4W	282	MS	89	0	0	0	1.7	6.4	6.6
84472	7.1S	78.5W	2622	S	48	1	2	4	2.4	-5.2	5.7
84501	8.1S	79.0W	30	MS	99	2	2	12	1.9	5.8	6.1
84542	9.4S	77.6W	2760	S	37	0	0	0	2.1	5.8	6.2
84686	13.6S	72.0W	3249	S	113	0	0	2	1.9	-5.5	5.8
84782	18.1S	70.3W	469	MS	104	0	0	0	1.7	9.2	9.4
85264	18.5S	64.1W	1998	S	48	6	13	4	2.0	-11.3	11.5
85406	18.3S	70.3W	58	M	121	1	1	2	1.3	7.7	7.8
85418	20.5S	70.2W	48	M	118	0	0	0	1.5	4.8	5.0
85442	23.4S	70.4W	135	M	123	0	0	1	1.1	6.1	6.2
85460	26.3S	70.6W	30	M	41	0	0	0	1.0	5.5	5.6
85470	27.3S	70.4W	291	M	91	0	0	0	1.8	4.3	4.7
85488	29.9S	71.2W	142	M	121	0	0	5	1.7	5.0	5.3

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71114	49.4N	121.5W	39	MS	114	0	0	25	3.5	4.0	5.3
71882	51.0N	118.2W	443	MS	123	0	0	15	3.9	4.5	6.0
71883	52.1N	119.3W	683	MS	122	0	0	7	3.1	4.3	5.3
71887	50.7N	120.5W	346	MS	120	2	2	3	4.3	5.2	6.7
71889	49.5N	119.6W	344	MS	120	0	0	18	3.9	4.5	6.0
71891	50.2N	121.6W	229	MS	123	7	6	14	4.9	5.5	7.4
72476	39.1N	108.5W	1475	MS	121	0	0	5	1.8	4.1	4.5
76118	30.4N	109.7W	1040	MS	41	0	0	0	1.1	-10.8	10.9
76539	22.1N	101.0W	1870	MS	94	0	0	0	1.3	-4.2	4.4
76625	20.6N	100.4W	1813	MS	78	0	0	0	1.5	-7.7	7.8
76632	20.1N	98.7W	2417	MS	43	0	0	98	1.1	-5.5	5.6
76634	20.1N	98.4W	2135	MS	79	1	1	85	1.6	-5.1	5.3
76658	19.2N	103.7W	494	MS	27	0	0	0	1.0	5.9	6.0
76698	19.6N	88.0W	20	MS	61	0	0	30	1.8	-4.0	4.4
76762	17.5N	99.5W	1865	MS	92	91	99	0	0.0	11.2	11.2
78627	15.3N	91.5W	1901	S	43	1	2	2	1.5	4.1	4.4
78650	13.6N	89.8W	15	M	29	0	0	69	1.2	-4.1	4.3

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
91339	5.5N	153.8E	3	MS	49	0	0	4	2.3	-4.4	5.0

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
01245	62.6N	9.7E	630	MS	90	0	0	1	1.0	-5.4	5.5
02045	67.8N	20.4E	408	M	104	104	100	0	0.0	0.0	0.0
06720	46.2N	7.3E	481	MS	124	0	0	20	2.7	4.1	4.9
06990	47.1N	9.5E	463	MS	124	0	0	8	2.2	4.1	4.7
08221	40.5N	3.6W	633	MS	115	0	0	1	1.3	6.1	6.2
11024	48.4N	15.4E	860	S8	123	95	77	0	0.9	-13.8	13.8
11150	47.8N	13.0E	450	MS	124	0	0	28	1.7	4.2	4.5
11180	47.7N	15.8E	1546	S8	124	0	0	83	1.7	-6.2	6.4
11213	46.6N	13.9E	495	MS	122	0	0	68	2.4	5.2	5.7
11231	46.6N	14.3E	476	MS	124	0	0	47	2.0	5.4	5.8
11241	47.2N	15.5E	1438	S8	123	0	0	54	1.0	-4.3	4.4
11384	47.6N	15.8E	1323	S8	123	0	0	59	1.7	-4.7	5.0
11385	47.8N	16.0E	936	S8	123	0	0	68	1.5	-4.1	4.4
11735	50.1N	17.2E	1512	S8	124	0	0	80	1.7	-5.1	5.4
12510	50.7N	15.7E	1613	8	122	0	0	84	2.0	-4.8	5.2
13369	43.3N	20.0E	1039	8	104	0	0	79	1.6	-4.2	4.5
16020	46.5N	11.3E	1461	MS	97	97	100	0	0.0	0.0	0.0
16134	44.2N	10.7E	2173	S8	117	6	5	26	2.6	-5.0	5.6
16227	41.9N	13.6E	655	MS	120	99	83	0	1.1	-13.4	13.4
16549	39.1N	8.3E	12	MS	117	0	0	0	1.2	-4.6	4.8
16614	40.4N	21.3E	604	MS	93	0	0	10	1.0	-6.8	6.9

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89264	71.4S	68.9W	780	S	62	0	0	0	2.3	4.0	4.6
89664	77.9S	166.7E	24	MS	73	0	0	1	2.2	-5.8	6.2
89744	74.0S	43.0E	3353	S	80	0	0	1	1.9	8.7	8.9
89803	68.5S	102.2E	2125	S	74	10	14	69	1.9	-11.5	11.7
89813	71.6S	111.3E	2763	M	78	0	0	14	3.6	-5.3	6.4
89860	74.2S	160.3E	1772	S	72	13	18	29	2.1	-11.8	12.0

TABLE 4

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: December, 1996

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :All hours combined.

Level(s) monitored :70.0 - 500.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

- :N REP. :Number of observations received excluding duplicates.
- :PG :Percentage of observations with gross errors.
- :PR :Percentage of observations rejected by quality control including rejections from the duplicate check.
- :PC :Percentage of observations with calm winds.
- :RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
- :BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP ≥ 20

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	166	2	3	1.7	0.3	166	0	2	1	7.8	1.4
AAL	5121	0	1	1.8	0.3	5137	0	2	0	9.0	0.7
AAN	67	0	0	1.8	0.0	59	0	2	0	9.5	1.6
AAR	2075	1	1	1.9	-0.1	2087	0	2	0	8.6	0.3
ACA	1733	0	1	2.0	0.0	1796	0	2	0	7.3	0.5
ACI	48	4	0	1.3	0.7	47	0	0	0	7.7	1.0
AEA	662	1	100	2.8	1.4	643	0	5	0	9.8	0.9
AEL	917	1	4	2.1	-0.4	923	1	5	0	8.6	0.8
AEY	43	0	5	1.9	1.3	44	0	5	0	10.4	1.0
AFL	195	2	24	2.3	0.6	194	0	5	0	10.8	1.7
AFR	1551	1	4	1.8	0.0	1582	0	5	0	8.4	0.8
AIC	32	0	3	2.0	-0.2	31	0	3	0	7.7	1.1
AIH	140	0	2	1.9	0.2	146	0	4	0	9.5	0.8
AJM	68	1	1	2.4	-0.7	77	0	4	0	9.6	0.6
AMT	387	1	3	2.0	0.5	397	0	4	0	9.4	0.8
AMX	257	2	5	1.9	-0.2	263	1	5	0	10.0	0.5
ANA	947	0	1	1.9	-0.5	949	0	2	0	8.8	0.4
ANZ	2621	1	3	1.9	0.0	2608	0	3	0	8.7	1.2
AOM	682	1	1	1.8	1.0	689	0	1	0	8.1	0.5
ARP	71	1	3	2.5	1.6	70	0	1	1	6.4	2.3
ASY	20	0	0	1.9	0.0	20	0	0	0	6.5	1.3
AUA	56	2	0	1.8	-0.5	57	0	0	0	7.6	0.6
AVA	344	1	4	1.9	0.0	349	0	5	0	9.7	0.6
AVN	41	2	2	1.4	0.6	41	0	0	0	7.3	1.1
AXA	68	0	0	2.3	1.0	67	0	1	0	9.8	0.0
AZA	601	1	6	2.5	0.7	600	0	6	0	8.8	0.7
BAL	504	1	10	1.8	-0.1	510	0	10	0	8.6	0.7
BAW	1452	1	3	1.8	-0.1	1470	0	4	0	8.6	0.7
BBB	40	0	0	1.9	-0.1	40	0	3	0	7.1	0.8
BWA	399	1	100	2.6	1.6	402	0	7	0	10.5	1.1
CAL	2088	0	1	1.9	-0.1	2109	0	3	0	9.4	0.5
CCA	162	1	5	2.8	0.3	186	0	93	0	14.8	-1.5
CDN	2026	0	1	2.0	0.3	2031	0	2	0	8.8	0.1
CES	274	0	3	2.3	0.3	281	3	7	0	11.8	-0.4
CFC	40	0	15	2.8	0.6	42	2	17	0	8.9	1.7
CFG	1338	0	2	1.8	-0.8	1342	0	3	0	8.8	0.2
CKS	207	1	36	2.9	1.6	209	0	2	1	7.8	0.6
CKT	142	1	4	1.6	0.5	147	0	9	0	10.3	1.0
CLX	331	1	2	1.7	-0.7	338	0	3	0	8.1	0.0
CMI	729	2	2	2.0	0.6	738	0	3	1	9.3	0.3
CMM	224	1	2	2.0	-0.1	224	0	3	0	10.5	0.3
COA	1008	1	3	1.9	0.6	1018	0	3	0	8.9	0.7
CPA	60	0	3	1.6	-0.6	64	0	5	0	10.4	-0.5
CRL	694	1	2	1.7	0.5	700	0	3	0	8.8	0.6
CSA	26	0	0	1.4	-0.3	26	0	0	0	6.1	2.1
CTM	58	0	12	1.7	-0.7	58	0	14	0	7.5	1.3
CUB	470	2	100	2.6	1.2	473	0	15	0	12.0	1.4
DAF	26	0	4	2.6	-1.9	26	0	8	0	12.4	0.4
DAL	5363	1	3	2.2	0.8	4986	0	2	0	8.7	0.3
DHL	377	9	100	4.7	-2.6	378	0	100	0	13.9	1.2
DLH	3438	1	7	1.8	0.3	3426	0	9	1	7.7	0.8
DOA	76	3	3	1.7	-0.2	76	0	4	0	10.5	0.3
EIA	94	0	9	2.0	-0.1	98	0	10	0	9.4	1.5
ELY	165	1	10	2.2	0.1	172	0	9	0	10.6	-0.3
EVA	820	0	2	1.9	-0.2	871	0	3	0	8.8	0.5
EWW	174	8	99	2.7	0.7	178	1	99	0	18.6	4.5
FDX	1324	0	1	1.9	0.7	1341	0	2	0	8.5	0.6
FIN	376	0	3	1.8	0.4	374	0	3	1	7.6	0.9
FJI	543	3	3	1.5	0.7	529	0	1	0	8.4	1.2

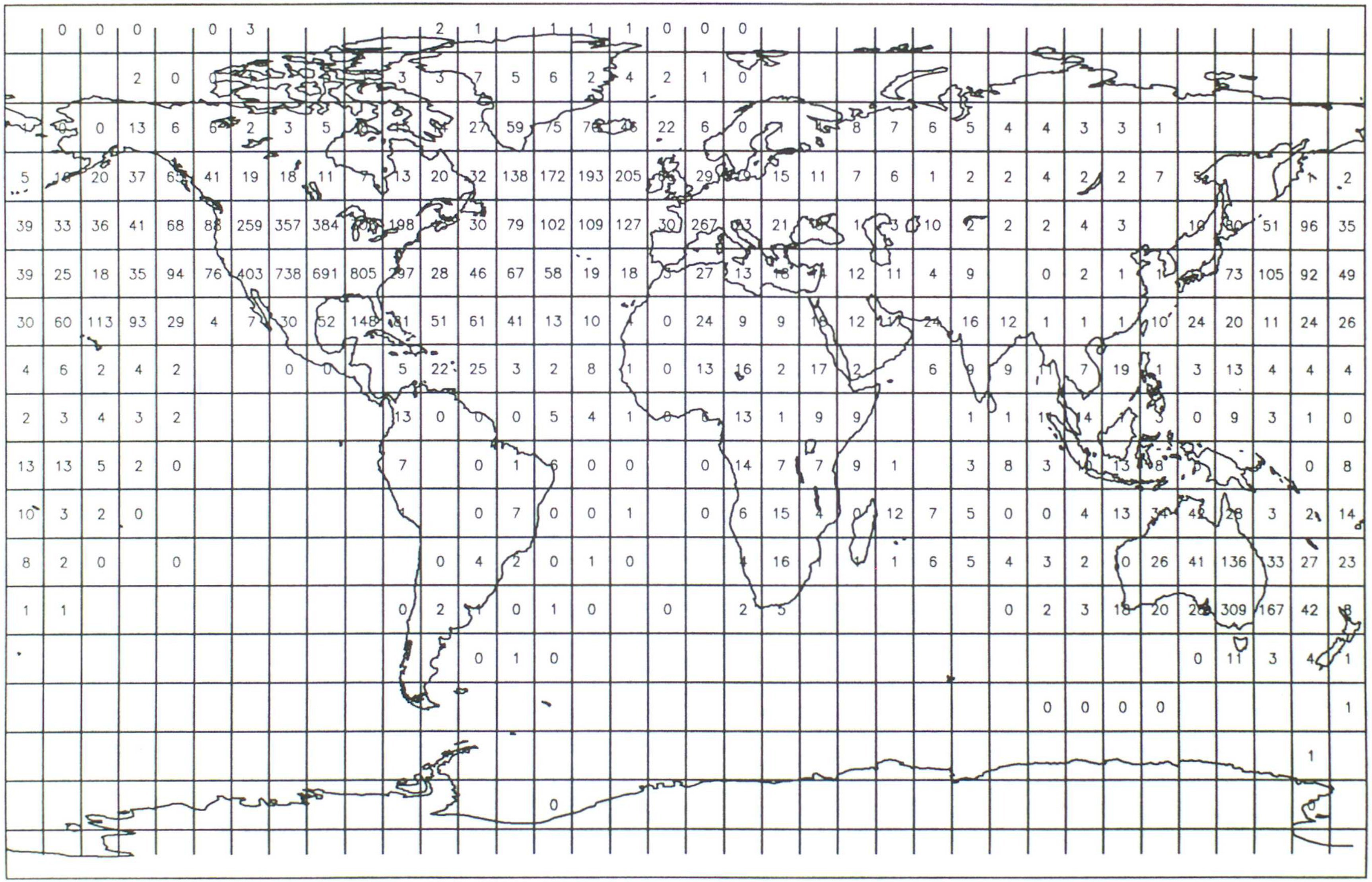
	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
FOM	139	4	5	2.4	1.4	147	0	100	1	12.9	0.5
GAF	55	2	4	2.7	0.6	54	0	6	4	8.9	0.6
GCO	45	0	2	2.1	1.3	50	0	8	0	10.8	2.0
GHA	29	0	3	1.4	0.4	30	0	7	0	7.2	0.4
GIA	220	1	1	1.7	0.8	225	0	0	0	7.5	1.3
GTI	51	0	0	2.5	1.4	53	0	9	2	13.8	0.7
HAL	1736	0	1	1.7	0.4	1737	0	3	0	9.9	0.8
HLF	243	1	2	1.7	-0.7	238	0	4	0	10.7	0.9
HRH	66	5	3	1.2	0.4	64	0	2	0	6.1	0.8
IBE	3008	1	18	2.0	0.5	3008	0	20	0	9.7	0.5
ICE	616	0	1	1.7	0.0	613	0	2	1	7.8	1.0
ILU	23	0	4	2.6	0.5	22	0	9	0	12.7	1.3
JAL	7072	1	1	2.0	0.3	7119	0	3	0	9.0	0.4
JAZ	80	0	0	1.9	1.0	80	0	3	1	9.2	0.0
KAL	3616	1	1	2.1	-0.2	3632	0	2	0	9.2	0.4
KLM	2613	0	1	1.8	0.3	2601	0	2	0	8.1	0.7
LDA	281	0	7	2.0	-1.0	280	0	6	0	7.3	0.3
LDI	226	0	13	2.1	-1.3	230	0	14	0	8.2	-0.4
LIB	389	1	3	1.8	0.8	394	0	4	0	8.9	1.3
LOB	25	12	8	2.5	1.6	25	0	24	0	18.3	6.2
LOT	262	0	1	1.8	-1.0	260	0	2	0	7.3	-0.1
LTU	1044	1	3	1.7	0.0	996	0	3	0	8.4	0.5
MAS	367	0	1	1.8	-0.3	397	0	4	1	9.7	0.0
MDA	180	1	1	1.8	0.0	181	0	2	1	8.7	-0.5
MON	30	0	3	1.6	0.6	29	3	21	3	10.3	1.2
MPH	945	0	2	1.8	-0.5	942	0	3	0	8.4	0.7
NCA	646	0	1	2.1	0.4	650	0	2	0	8.8	0.7
NWA	10396	1	2	2.1	0.7	10440	0	2	0	9.1	0.4
PAC	93	1	4	2.4	0.4	95	0	2	0	7.6	1.3
PAL	1178	1	2	1.7	-0.2	1175	0	4	1	10.1	0.6
PAO	199	1	3	1.8	0.4	197	0	3	0	8.2	0.5
PIA	26	0	8	3.0	-0.1	27	0	7	0	9.0	0.1
QFA	1111	1	3	1.8	0.4	1107	0	3	1	8.0	1.3
RAF	185	0	0	1.9	0.4	184	0	0	0	8.7	0.7
RAM	37	0	5	2.6	-1.1	37	0	0	0	11.0	2.8
RCH	398	3	98	3.0	0.4	422	0	99	0	14.5	2.6
RJA	87	1	2	1.8	0.6	88	0	2	0	7.2	0.2
RKA	126	2	2	1.5	0.0	127	0	3	0	8.9	1.1
RON	35	0	0	1.1	0.0	35	0	3	0	7.7	2.5
RRR	28	4	14	2.6	0.1	28	0	11	0	10.5	2.5
SAA	278	0	3	1.8	-0.3	278	0	4	0	9.6	0.5
SAB	66	0	5	1.3	0.2	69	0	9	0	11.8	-0.6
SAS	1012	0	1	2.1	0.7	1012	0	2	0	7.8	0.2
SEU	25	4	4	1.2	0.3	25	0	0	0	8.1	0.0
SIA	1413	0	2	2.0	-0.7	1449	0	4	0	9.7	0.4
SLR	47	0	13	1.7	-0.4	47	0	13	0	10.5	1.7
SOL	62	3	5	1.8	0.6	61	0	2	0	6.6	2.2
SPP	218	1	9	2.0	0.3	205	1	11	0	8.6	1.0
SVA	118	1	5	2.0	0.6	122	0	100	0	13.7	1.9
SVV	35	3	3	2.3	1.7	36	3	3	0	12.3	-1.3
SWR	168	2	3	1.8	0.5	171	0	3	0	8.0	1.0
TAP	452	1	4	1.8	-0.1	451	0	5	0	9.3	1.0
TEJ	68	6	15	1.9	0.4	74	0	20	0	9.4	1.2
THA	262	1	3	2.3	-0.7	271	0	3	0	10.7	-0.1
TOW	100	0	9	1.6	-0.3	100	0	12	0	10.7	-0.2
TWA	1346	0	1	2.0	0.2	1346	0	3	0	9.0	0.9
TWE	39	0	5	3.1	1.3	40	0	3	0	6.8	0.9
UAL	12689	1	2	2.2	-0.1	12784	0	2	0	8.6	0.6
ULE	348	0	1	1.7	0.4	346	0	3	0	8.4	0.7

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
UPS	896	0	11	1.8	0.0	929	0	12	0	8.1	0.6
USA	262	2	4	1.8	-0.1	254	0	5	0	9.2	0.8
VIA	599	2	6	2.5	0.9	602	0	4	0	9.0	1.1
VIR	271	0	3	1.8	-0.4	280	0	3	0	8.3	0.8
VRB	31	3	3	2.6	1.9	32	0	0	0	7.3	0.5
VRG	53	2	4	1.8	0.8	54	0	4	0	8.6	2.2
VSP	244	3	4	2.1	0.3	244	0	3	0	9.6	-0.1
VVJ	29	10	24	4.0	3.0	33	0	9	3	11.4	3.1
WOA	70	0	14	2.6	1.5	71	0	14	0	9.4	-0.4
AF	31	3	3	1.8	-0.8	31	0	0	0	8.7	3.0
AN	23335	0	2	1.1	0.1	23145	0	2	0	6.4	0.9
BA	18610	0	7	1.2	0.4	18552	0	7	0	6.9	1.2
DL	103316	0	2	1.4	0.1	103316	0	1	0	7.1	1.3
IT	598	0	2	0.9	0.0	598	0	1	0	7.5	1.6
KL	12565	0	5	1.2	0.3	12559	0	11	0	7.2	1.2
LH	4176	0	2	1.4	0.4	4149	0	2	0	6.7	0.9
MK	4566	0	1	1.4	0.8	4543	0	1	0	7.7	1.7
NW	36793	0	2	1.5	0.3	36793	0	2	0	7.1	1.2
QF	4815	0	1	1.0	0.2	4814	0	1	0	6.5	0.8
SA	3641	0	1	1.1	0.7	3638	0	1	0	7.2	1.5
SV	2371	0	2	1.3	0.8	2355	0	30	0	7.1	1.4
N	416	3	3	2.5	0.4	425	0	3	0	9.3	0.7

MEAN DAILY COUNT OF AIRCRAFT 70 – 500 HPA FIGURE 3

DECEMBER 1996

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED



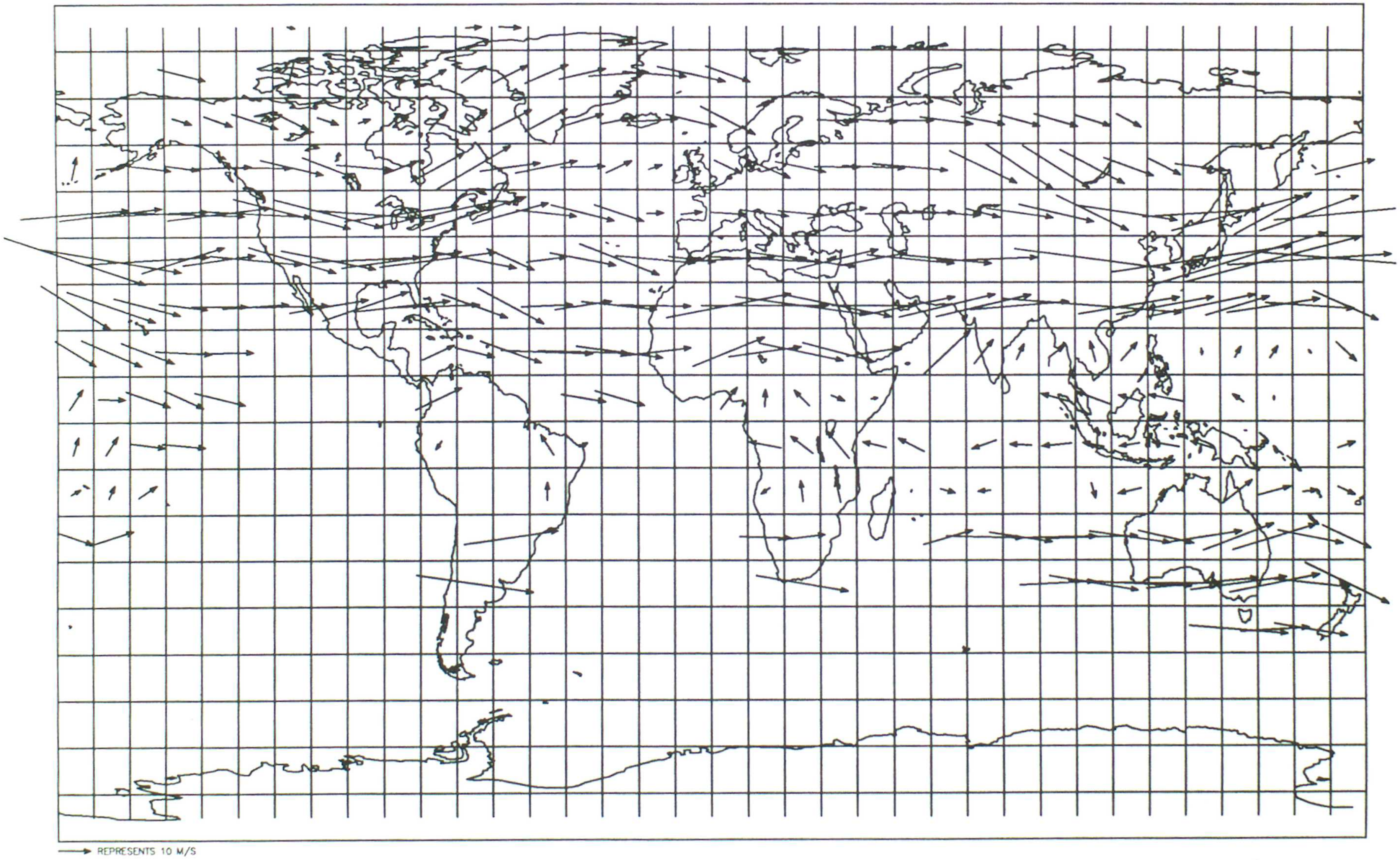
AIRCRAFT MEAN WINDS BETWEEN 70 AND 500 HPA

FIGURE 4

DECEMBER 1996

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



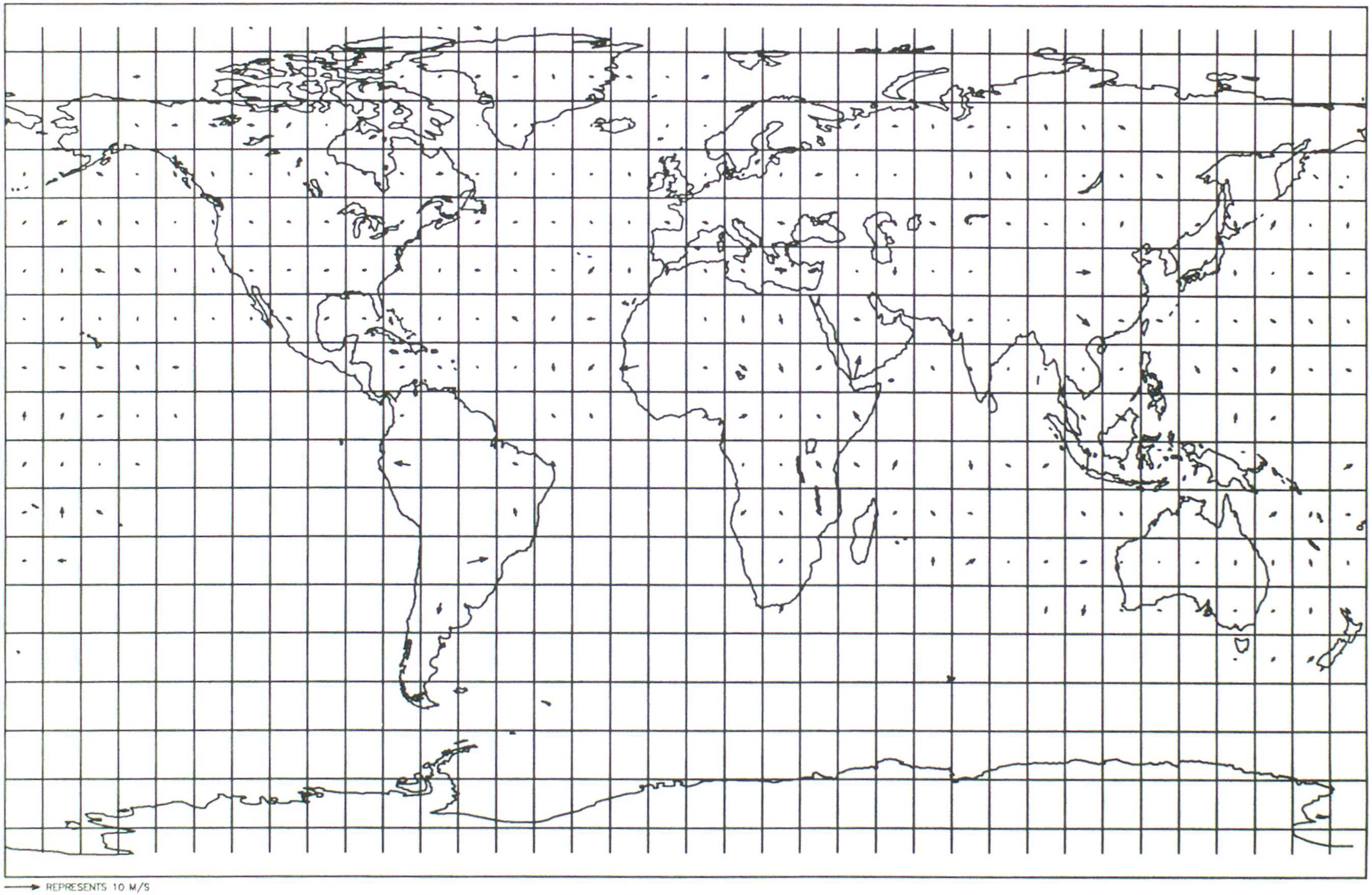
AIRCRAFT MEAN O−B WINDS BETWEEN 70 AND 500 HPA

FIGURE 5

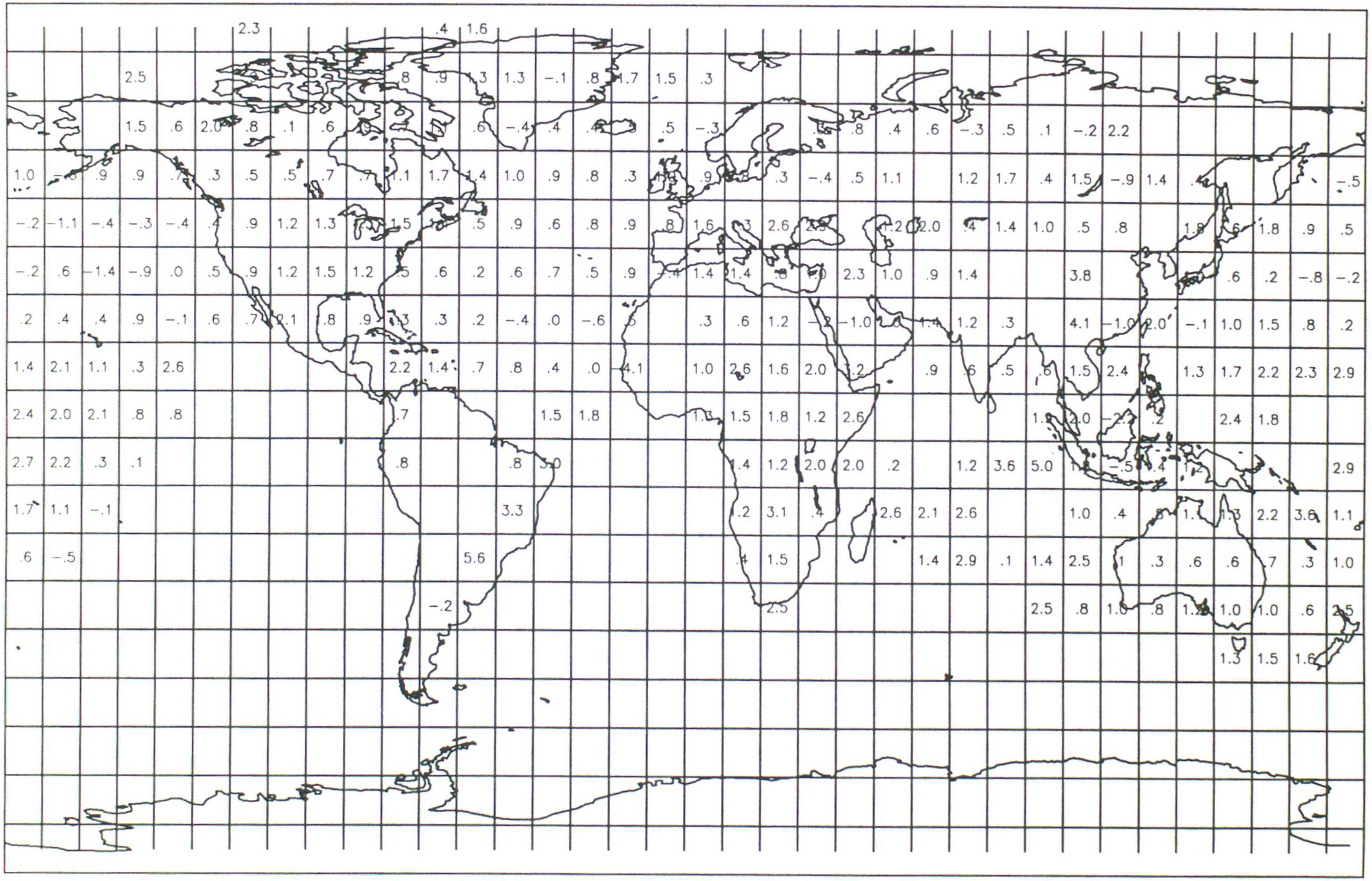
DECEMBER 1996

OBSERVATIONS WITH O−B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



AIRCRAFT : MEAN O-B SPEEDS (M/S) BETWEEN 70 AND 500 HPA FIGURE 6
DECEMBER 1996
OBSERVATIONS WITH O-B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT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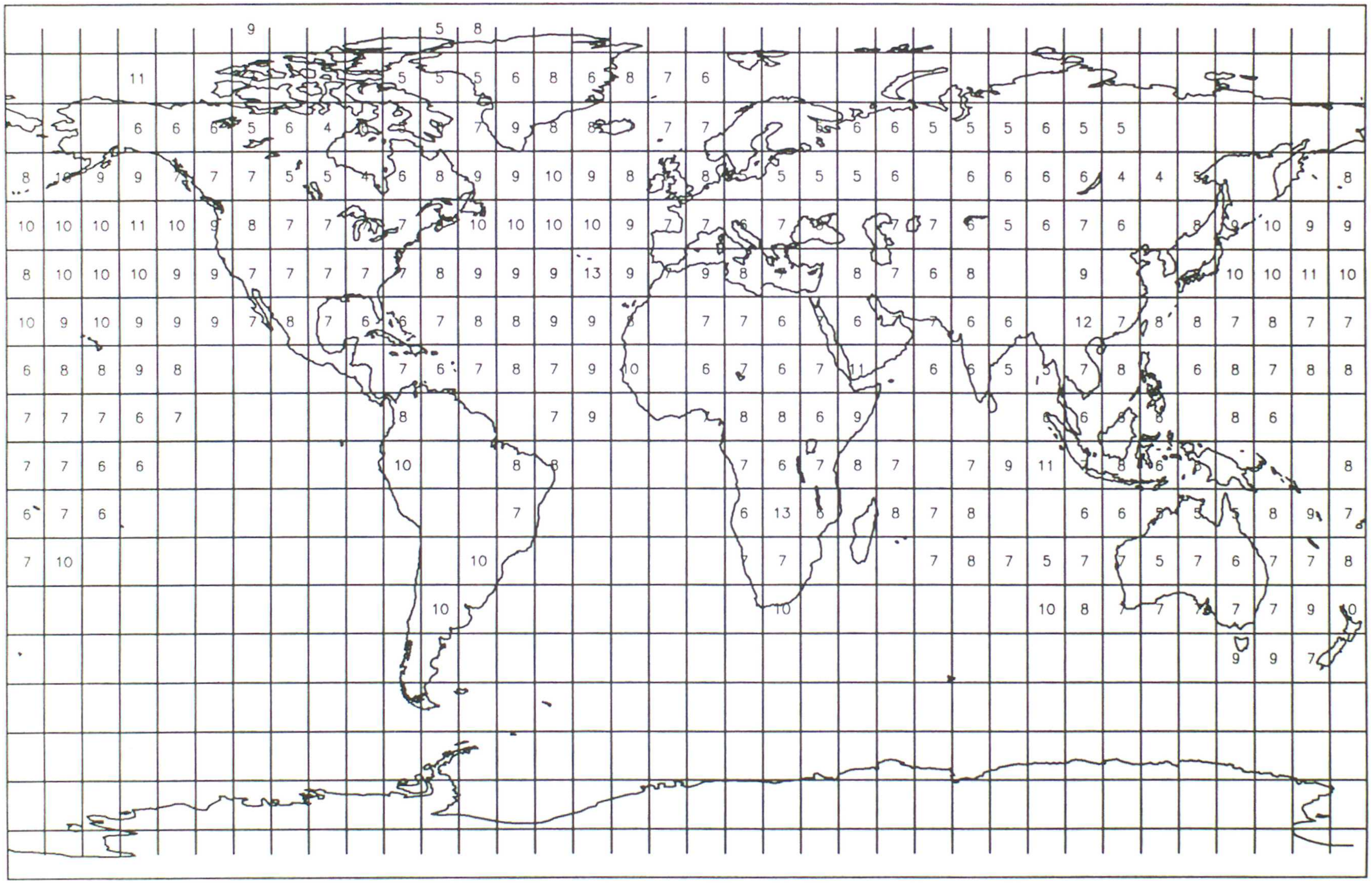
2.5 .8 .9 1.3 1.3 -.1 .8 1.7 1.5 .3
1.5 .6 2.0 .8 .1 .6 .6 -.4 .4 .5 -.3 .8 .4 .6 -.3 .5 .1 -.2 2.2
1.0 .9 .9 .3 .5 .5 .7 1.1 1.7 1.4 1.0 .9 .8 .3 .9 .3 -.4 .5 1.1 1.2 1.7 .4 1.5 -.9 1.4 -.5
-.2 -1.1 -.4 -.3 -.4 .9 1.2 1.3 1.5 .5 .9 .6 .8 .9 .8 1.6 2.6 2.0 1.4 1.0 .5 .8 1.8 1.8 .9 .5
-.2 .6 -1.4 -.9 .0 .5 .9 1.2 1.5 1.2 .6 .2 .6 .7 .5 .9 1.4 1.4 2.3 1.0 .9 1.4 3.8 .6 .2 -.8 -.2
.2 .4 .4 .9 -.1 .6 .7 .1 .8 .9 .3 .2 -.4 .0 -.6 .3 .6 1.2 -1.0 1.2 .3 4.1 -1.0 2.0 -.1 1.0 1.5 .8 .2
1.4 2.1 1.1 .3 2.6 2.2 1.4 .7 .8 .4 .0 4.1 1.0 2.6 1.6 2.0 1.2 .9 .6 .5 1.5 2.4 1.3 1.7 2.2 2.3 2.9
2.4 2.0 2.1 .8 .8 .7 1.5 1.8 1.3 1.5 1.8 1.2 2.6 1.5 2.0 .2 2.4 1.8
2.7 2.2 .3 .1 .8 .8 3.0 1.4 1.2 2.0 2.0 .2 1.2 3.6 5.0 -.5 2.9
1.7 1.1 -.1 3.3 1.2 3.1 2.6 2.1 2.6 1.0 .4 2.2 3.6 1.1
.6 -.5 5.6 1.5 1.4 2.9 .1 1.4 2.5 .3 .6 .6 .7 .3 1.0
-.2 2.5 2.5 .8 1.0 .8 1.0 1.0 .6 2.5
1.3 1.5 1.6

AIRCRAFT : RMS O-B VECTOR (M/S) BETWEEN 70 AND 500 HPA FIGURE 7
DECEMBER 1996
OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT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6 6 6 5 6 4 6 8 7 9 8 8 7 7 6 6 6 5 5 5 6 5 5
8 10 9 9 7 7 7 5 5 4 6 8 9 9 10 9 8 8 8 5 5 5 6 6 6 6 6 4 4 5 8
10 10 10 11 10 9 8 7 7 7 10 10 10 10 9 7 7 6 7 6 7 7 6 5 6 7 6 8 9 10 9 9
8 10 10 10 9 9 7 7 7 7 7 8 9 9 9 13 9 7 9 8 7 8 7 6 8 9 10 10 11 10
10 9 10 9 9 9 7 8 7 6 6 7 8 8 9 9 8 7 7 6 6 6 7 6 6 12 7 8 8 7 8 7 7
6 8 8 9 8 7 6 7 8 7 9 10 6 7 6 7 11 6 6 5 5 7 8 6 8 7 8 8
7 7 7 6 7 8 7 9 8 8 6 9 6 6 8 6
7 7 6 6 10 8 8 7 6 7 8 7 7 9 11 8 6 8
6 7 6 7 6 13 6 8 7 8 6 6 5 5 8 9 7
7 10 10 7 7 7 8 7 5 7 7 5 7 6 7 7 8
10 10 10 8 7 7 7 7 7 9 10
9 9 7

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: December, 1996

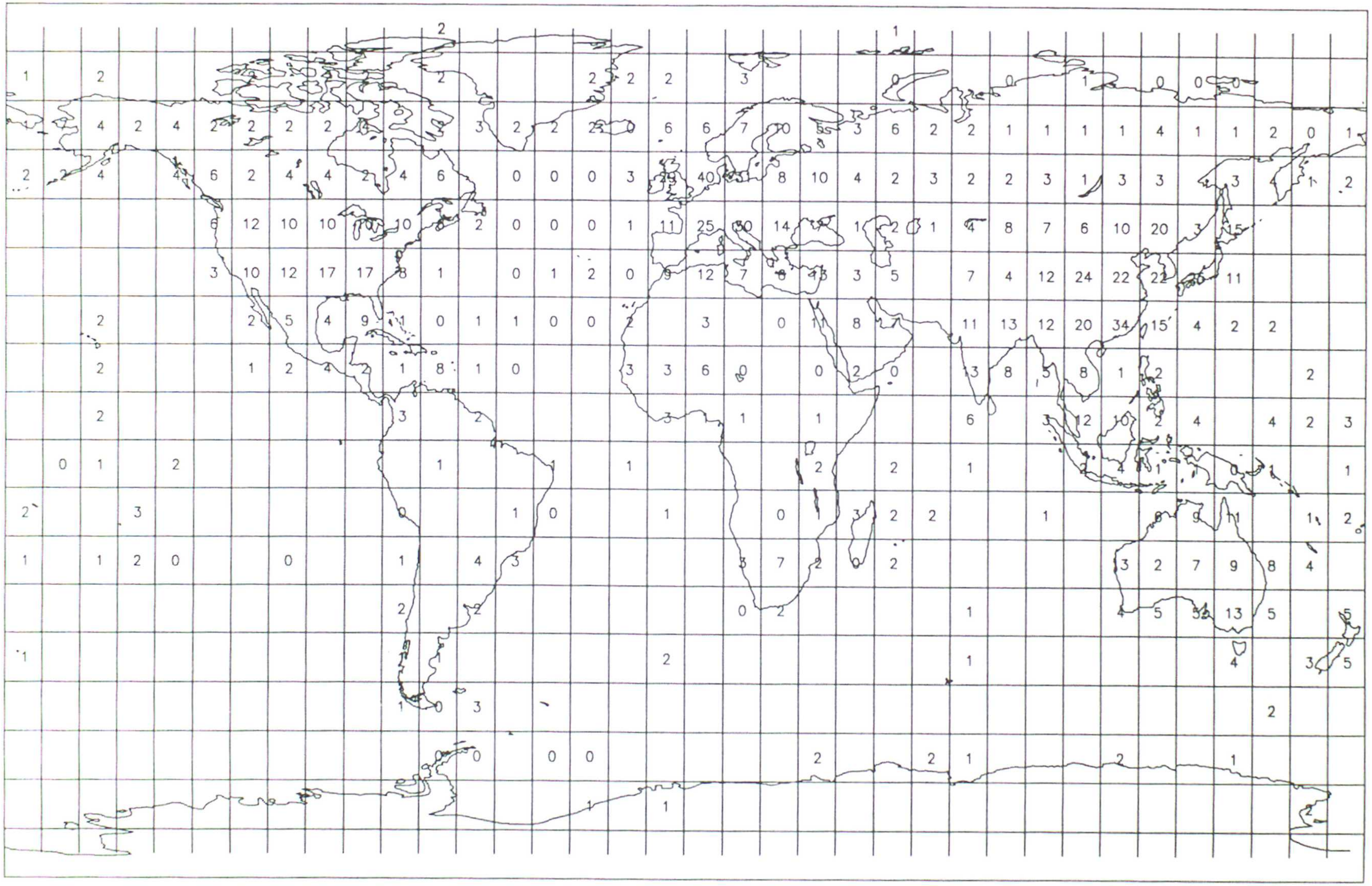
Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown duringperiod.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
25563	00	Z	150	65/ 178	13	0	36.6	107.6	113.7	4
33658	12	Z	30	48/ 26	16	0	84.1	230.3	245.2	6
37018	00	Z	250	44/ 39	29	0	29.5	83.9	89.0	4
42314	00	Z	300	27/ 95	21	0	64.9	-33.9	73.2	7
42339	00	Z	200	26/ 73	23	0	92.2	17.3	93.8	4
42361	12	Z	250	26/ 78	20	0	72.7	7.7	73.1	5
42369	00	Z	250	27/ 81	21	1	88.2	-46.5	99.7	7
42369	12	Z	70	27/ 81	9	2	144.9	129.4	194.3	8
42379	00	Z	100	27/ 83	20	0	134.8	3.3	134.8	8
42379	12	Z	70	27/ 83	16	1	141.0	17.1	142.1	6
42397	00	Z	250	27/ 88	18	0	56.6	-87.2	104.0	7
42492	00	Z	30	26/ 85	12	0	192.1	104.3	218.6	4
42492	12	Z	150	26/ 85	29	0	90.8	-39.0	98.9	8
42647	00	Z	300	23/ 73	26	0	46.9	-64.0	79.3	6
42647	12	Z	100	23/ 73	12	0	90.8	118.4	149.2	5
42701	00	Z	30	23/ 85	14	0	153.7	143.0	210.0	4
42724	12	Z	300	24/ 91	25	0	35.1	-65.2	74.1	4
42867	00	Z	100	21/ 79	13	0	114.9	8.8	115.2	4
42867	12	Z	200	21/ 79	19	0	92.4	-13.8	93.4	7
42874	12	Z	200	21/ 82	22	0	90.6	-63.4	110.6	8
42971	00	Z	200	20/ 86	25	0	82.0	-46.0	94.0	7
43003	12	Z	70	19/ 73	10	0	126.9	97.1	159.8	4
43014	00	Z	200	20/ 75	20	2	79.5	-38.4	88.3	7
43041	00	Z	200	19/ 82	25	0	46.3	-84.4	96.3	8
43041	12	Z	70	19/ 82	9	2	131.9	-75.3	151.9	8
43128	00	Z	70	17/ 78	13	0	144.4	-98.2	174.6	8
43128	12	Z	70	17/ 78	17	0	131.1	74.1	150.6	7
43185	00	Z	50	16/ 81	13	0	108.1	74.8	131.4	4
43279	00	Z	150	13/ 80	25	1	66.0	-110.2	128.5	6
43279	12	Z	300	13/ 80	27	0	56.1	-43.8	71.2	6
43285	12	Z	100	13/ 75	16	0	115.9	21.9	117.9	7
43311	00	Z	200	11/ 73	12	0	97.7	22.3	100.2	5
43346	12	Z	30	11/ 80	15	0	94.5	194.4	216.1	4
43369	00	Z	70	8/ 73	9	1	152.1	-49.7	160.0	4
43371	00	Z	70	8/ 77	21	0	92.5	-175.3	198.2	8
44212	12	Z	200	50/ 92	17	0	106.8	22.4	109.2	5
54497	12	Z	70	40/ 124	22	2	103.3	107.2	148.9	5
58847	00	Z	100	26/ 119	23	0	44.1	117.0	125.1	4
60360	12	Z	300	37/ 8	5	8	87.4	-109.2	139.9	6
60490	12	Z	500	36/ -1	8	11	44.7	-86.6	97.5	8
61902	12	Z	100	-8/ -14	12	1	49.5	184.9	191.4	6
62306	00	Z	70	31/ 27	12	2	106.1	112.7	154.8	4
63450	12	Z	700	9/ 39	18	0	11.8	46.2	47.7	4
65578	12	Z	30	5/ -4	21	0	38.2	178.1	182.2	4
68240	12	Z	200	-24/ 26	15	0	126.3	93.0	156.8	7
89009	12	Z	400	-90/ 0	25	1	62.6	7.3	63.1	5
89022	12	Z	250	-75/ -27	13	0	44.8	70.5	83.5	5
89664	00	Z	850	-78/ 167	24	0	18.8	-34.1	38.9	5
91557	12	Z	200	-18/ 168	13	0	27.4	-196.5	198.4	10
96163	00	Z	150	-1/ 100	17	3	116.7	37.0	122.4	8
96237	00	Z	100	-2/ 106	9	1	128.4	-52.1	138.6	6
97560	12	Z	400	-1/ 136	12	0	44.8	-59.8	74.7	6
97724	00	Z	100	-4/ 128	6	15	46.1	257.3	261.4	7
97724	12	Z	100	-4/ 128	3	18	27.7	245.0	246.6	9

AVAILABILITY – TEMP – 500 HPA GEOPOTENTIAL – DECEMBER 1996 FIGURE 8
ALL HOURS
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
TOTAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1320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6 12 10 10 10 10 2 0 0 0 1 11 25 30 14 1 2 1 4 8 7 6 10 20 3 15
3 10 12 17 17 8 1 0 1 2 0 9 12 7 8 43 3 5 7 4 12 24 22 22 20 11
2 2 5 4 9 1 0 1 1 0 0 2 3 0 1 8 7 11 13 12 20 34 15 4 2 2
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1 1 2 1 4 3 5
1 0 3 2
0 0 0 2 2 1 2 1
1 1

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: December, 1996

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix 1.2

SELECTION CRITERIA : ≥ 10 observations and ≥ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
42397	00	V	200	27/ 88	15	0	13	-10.2	-10.6	16.0	1
43369	00	V	250	8/ 73	14	0	7	-0.5	0.2	15.2	1
47058	00	V	400	39/ 126	12	0	8	-11.2	3.4	19.6	1
47058	12	V	400	39/ 126	12	1	7	-10.0	3.6	17.9	1
54374	12	V	150	42/ 127	13	0	7	6.7	-1.4	15.2	1
62019	12	V	250	31/ 17	13	0	7	1.2	0.2	16.3	1

AVAILABILITY – TEMP/PILOT – 300 HPA WIND – DECEMBER 1996

FIGURE 9

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

TOTAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1179

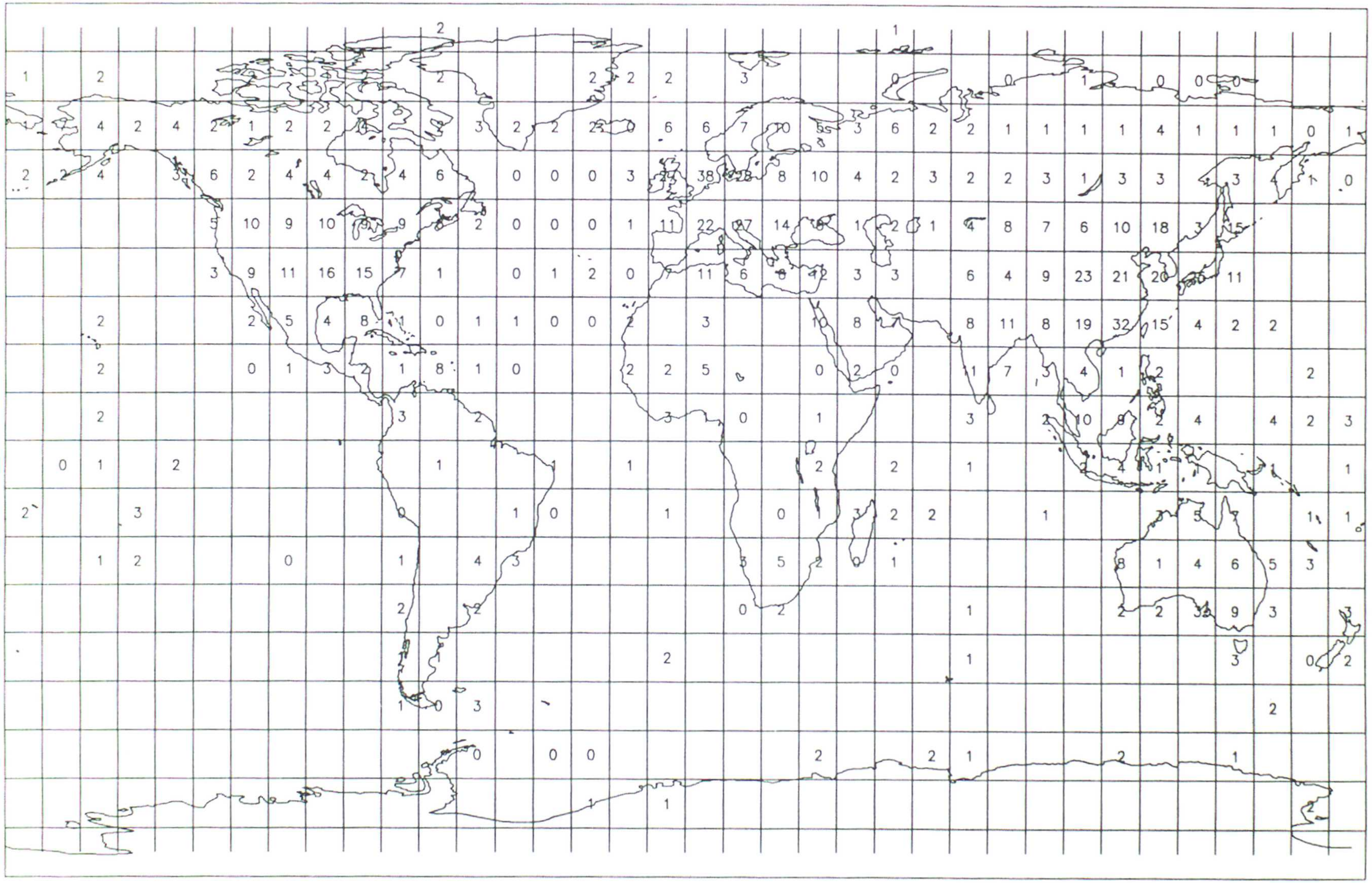

2 1
1 2 2 2 2 2 3 0 0 1 0 0 0
4 2 4 2 1 2 2 3 2 2 2 0 6 6 7 10 5 3 6 2 2 1 1 1 1 4 1 1 1 0 1
2 2 4 3 6 2 4 4 2 4 6 0 0 0 3 29 38 23 8 10 4 2 3 2 2 3 1 3 3 3 4 0
5 10 9 10 9 2 0 0 0 1 11 22 27 14 6 1 2 1 4 8 7 6 10 18 3 15
3 9 11 16 15 7 1 0 1 2 0 7 11 6 8 12 3 3 6 4 9 23 21 20 11
2 2 5 4 8 1 0 1 1 0 0 2 3 10 8 7 8 11 8 19 32 15 4 2 2
2 0 1 3 2 1 8 1 0 2 2 5 0 2 0 11 7 3 4 1 2 2
2 3 2 3 0 1 3 2 10 8 2 4 4 2 3
0 1 2 1 1 1 2 2 1 2 4 1 1
2 3 0 1 0 1 0 1 3 2 2 1 3 5 7 1 1
1 2 0 1 4 3 3 5 2 0 1 8 1 4 6 5 3
2 2 0 2 1 2 2 3 9 3 3
1 2 1 3 0 2
1 0 3 2
0 0 0 2 2 1 2 1
1 1 2

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: December, 1996

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 500.0 - 150.0 hPa
Element monitored		:WIND DIRECTION in degrees
Parameters monitored		
	:NUM OBS	:Average number of observations at all levels.
	:BIAS	:Mean difference of observations from background values from all levels.
	:MAX SPREAD	:(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels
	:SD	:SD of difference of observations from background values at all levels.

SELECTION CRITERIA

:NUM OBS ≥ 5, and
ABSOLUTE BIAS $\geq 10°$, with
SD $< 30°$, and
MAX SPREAD $< 10°$

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
01028	00	DD	75/ 19	25	-10.6	8.3	17.8
16144	12	DD	45/ 12	27	14.5	5.8	19.3
17280	00	DD	38/ 40	28	-10.8	4.0	12.8
25399	00	DD	66/-170	24	10.3	7.4	18.0
42397	00	DD	27/ 88	17	23.0	4.5	16.8
42397	12	DD	27/ 88	17	25.2	8.8	19.8
54337	00	DD	41/ 121	27	-10.3	2.6	12.4
55591	00	DD	30/ 91	26	-12.3	3.1	16.8
55591	12	DD	30/ 91	27	-11.7	4.1	17.8
59758	00	DD	20/ 110	29	11.1	3.8	13.7
60490	12	DD	36/ -1	16	-11.2	8.4	18.6
61052	00	DD	13/ 2	24	-10.6	6.1	17.2
72476	00	DD	39/-109	25	-13.1	3.7	7.8
72476	12	DD	39/-109	25	-13.2	1.4	7.0
83746	12	DD	-23/ -43	20	-10.1	4.2	17.6
83780	12	DD	-24/ -47	21	-11.1	4.6	19.3
96471	12	DD	6/ 116	18	13.7	8.2	21.3
96481	12	DD	4/ 118	21	16.7	6.1	24.4

MONITORING OF SATELLITE WINDS

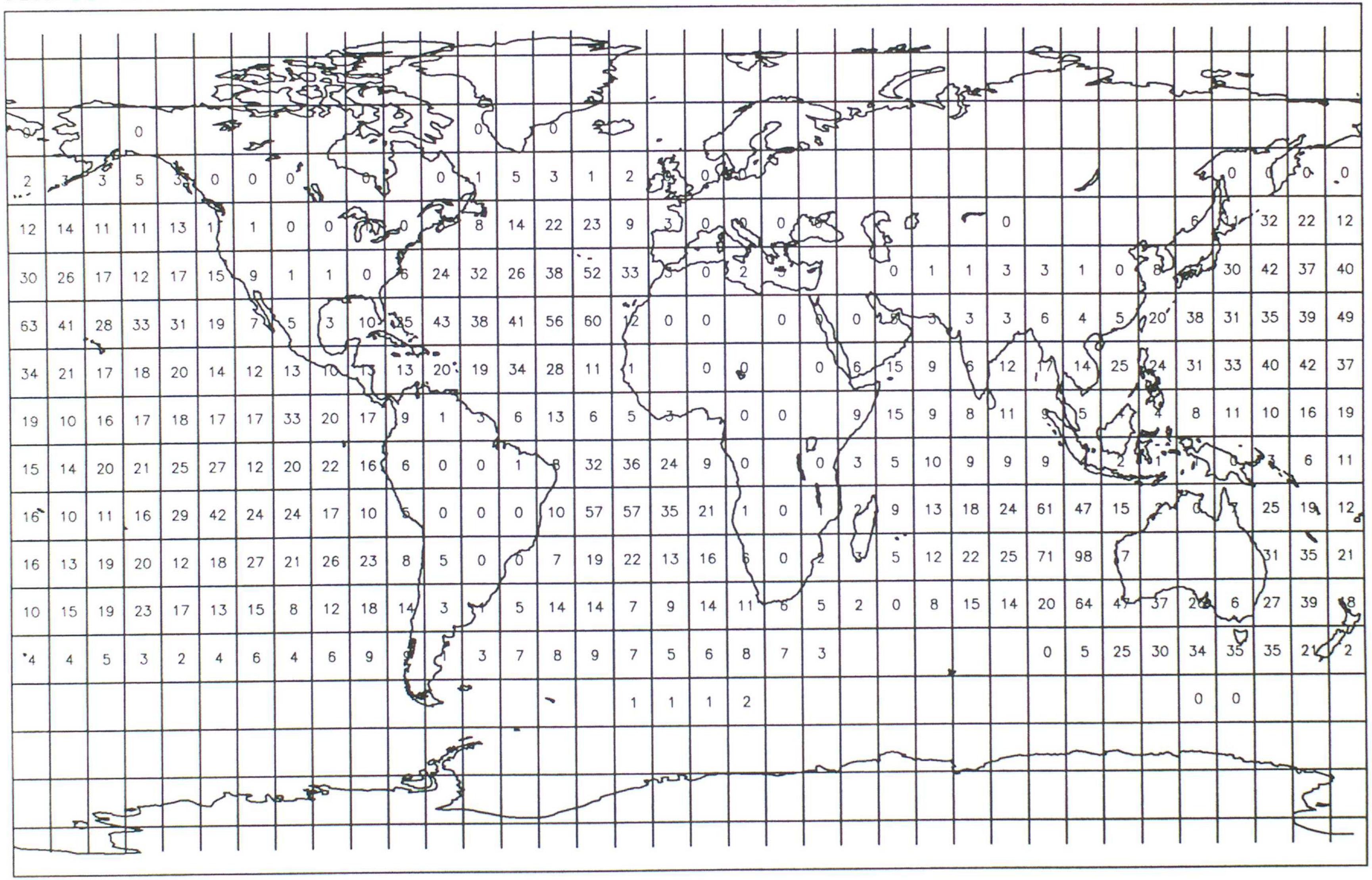
MONITORING CENTRE: BRACKNELL

MONTH: December, 1996

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from GOES, METEOSAT, GMS, INSAT.
Standard of comparison	:Background field from Bracknell global model.
Selection Criteria	:number of observations > 10.
Data Extracted	:Layer 701 - 1000 hPa 401 - 700 hPa 101 - 400 hPa :Mean wind :Mean observation minus background vector wind differences :Mean observation minus background speed differences :RMS of observation minus background vector differences

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 701 AND 1000 HPA FIGURE 10
DECEMBER 1996


0 0 0 0
2 3 3 5 3 0 0 0 0 0 1 5 3 1 2 0 0 0 0 0 0
12 14 11 11 13 1 1 0 0 0 8 14 22 23 9 3 0 0 0 0 0 6 1 32 22 12
30 26 17 12 17 15 9 1 1 0 6 24 32 26 38 52 33 3 0 2 3 0 1 1 3 3 1 0 8 30 42 37 40
63 41 28 33 31 19 7 5 3 10 35 43 38 41 56 60 12 0 0 0 0 0 3 3 3 6 4 5 20 38 31 35 39 49
34 21 17 18 20 14 12 13 10 13 13 20 19 34 28 11 1 0 0 0 6 15 9 6 12 17 14 25 24 31 33 40 42 37
19 10 16 17 18 17 17 33 20 17 9 1 3 6 13 6 5 3 0 0 9 15 9 8 11 9 5 4 4 8 11 10 16 19
15 14 20 21 25 27 12 20 22 16 6 0 0 1 8 32 36 24 9 0 0 3 5 10 9 9 9 4 2 1 0 3 6 11
16 10 11 16 29 42 24 24 17 10 5 0 0 0 10 57 57 35 21 1 0 1 2 9 13 18 24 61 47 15 2 0 7 25 19 12
16 13 19 20 12 18 27 21 26 23 8 5 0 0 7 19 22 13 16 6 0 2 3 5 12 22 25 71 98 7 31 35 21
10 15 19 23 17 13 15 8 12 18 14 3 1 5 14 14 7 9 14 11 6 5 2 0 8 15 14 20 64 47 37 26 6 27 39 18
4 4 5 3 2 4 6 4 6 9 1 3 7 8 9 7 5 6 8 7 3 0 5 25 30 34 35 35 21 2
1 1 1 2 0 0

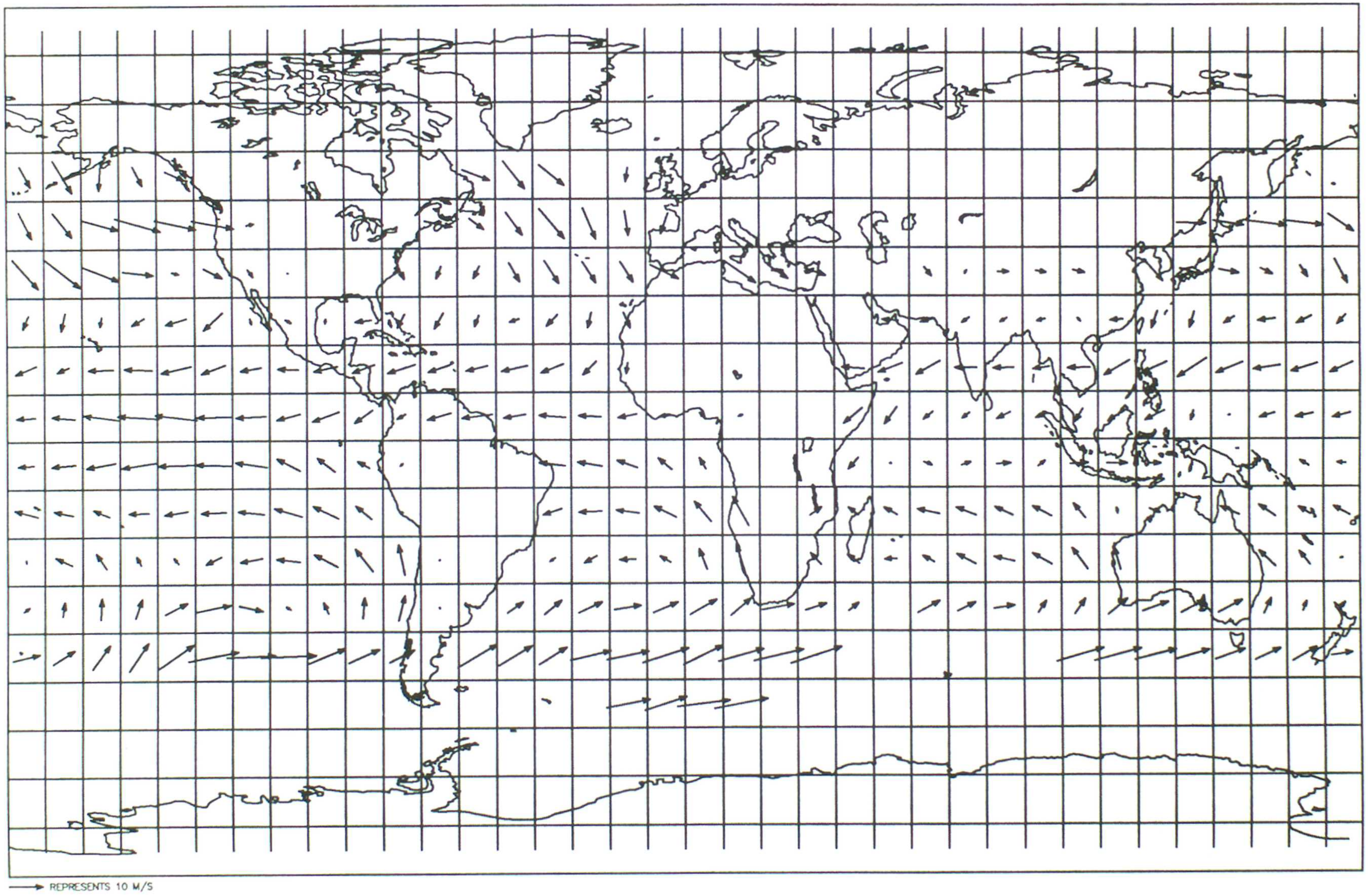
SATOB VECTOR MEAN WINDS BETWEEN 701–1000 HPA

FIGURE 11

DECEMBER 1996

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT


REPRESENTS 10 M/S

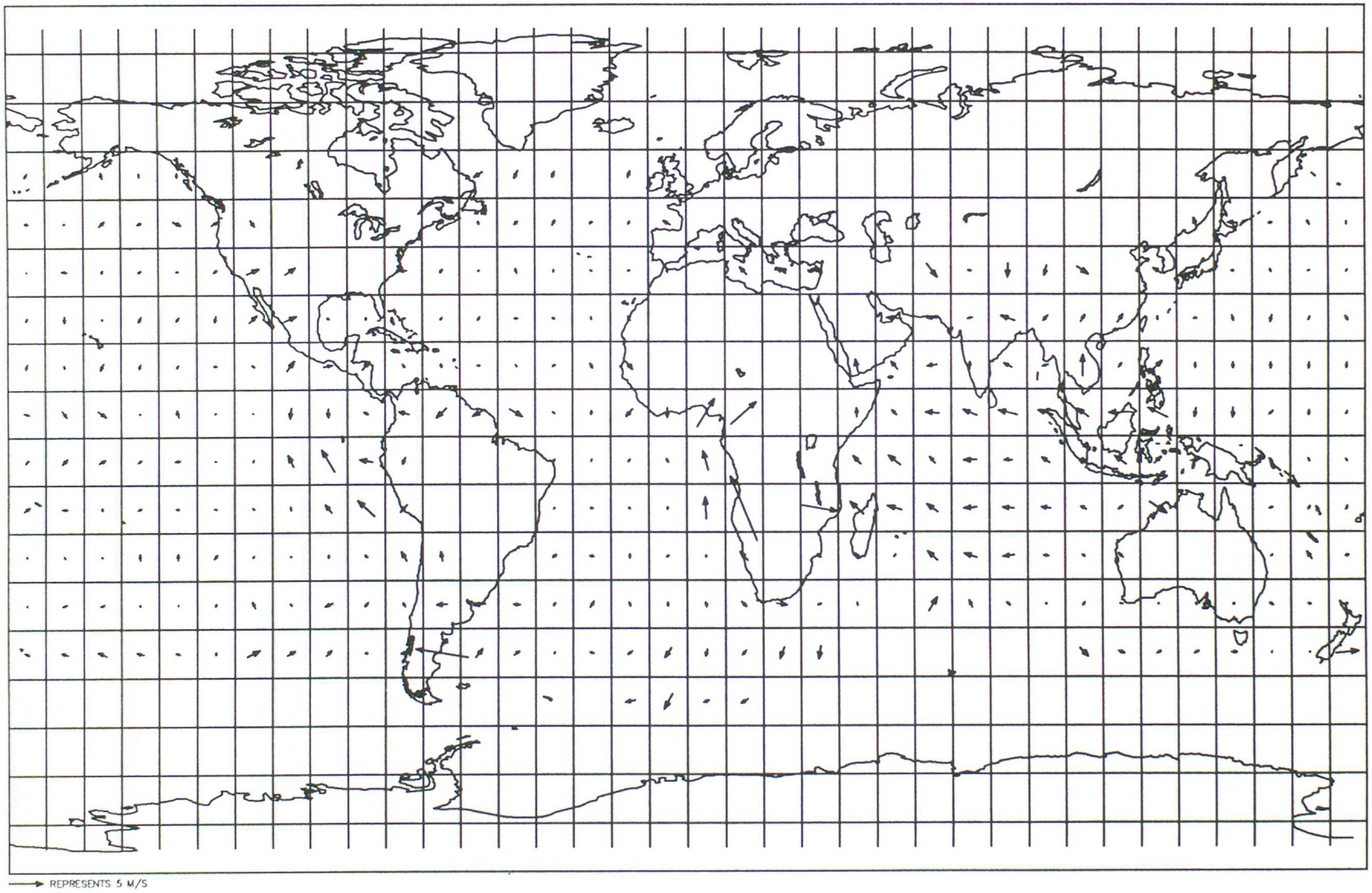
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 701-1000 HPA

FIGURE 12

DECEMBER 1996

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

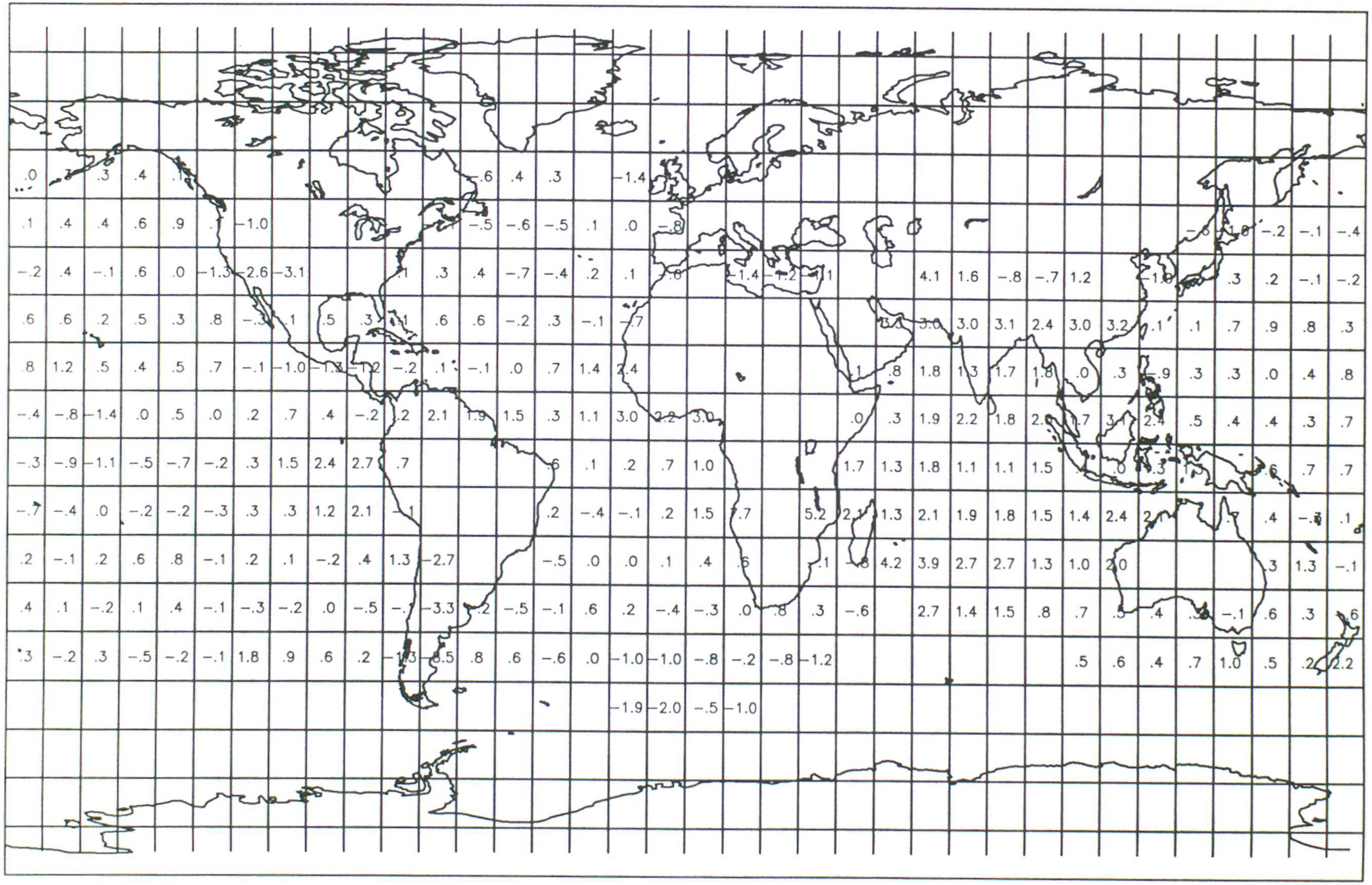


SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 13

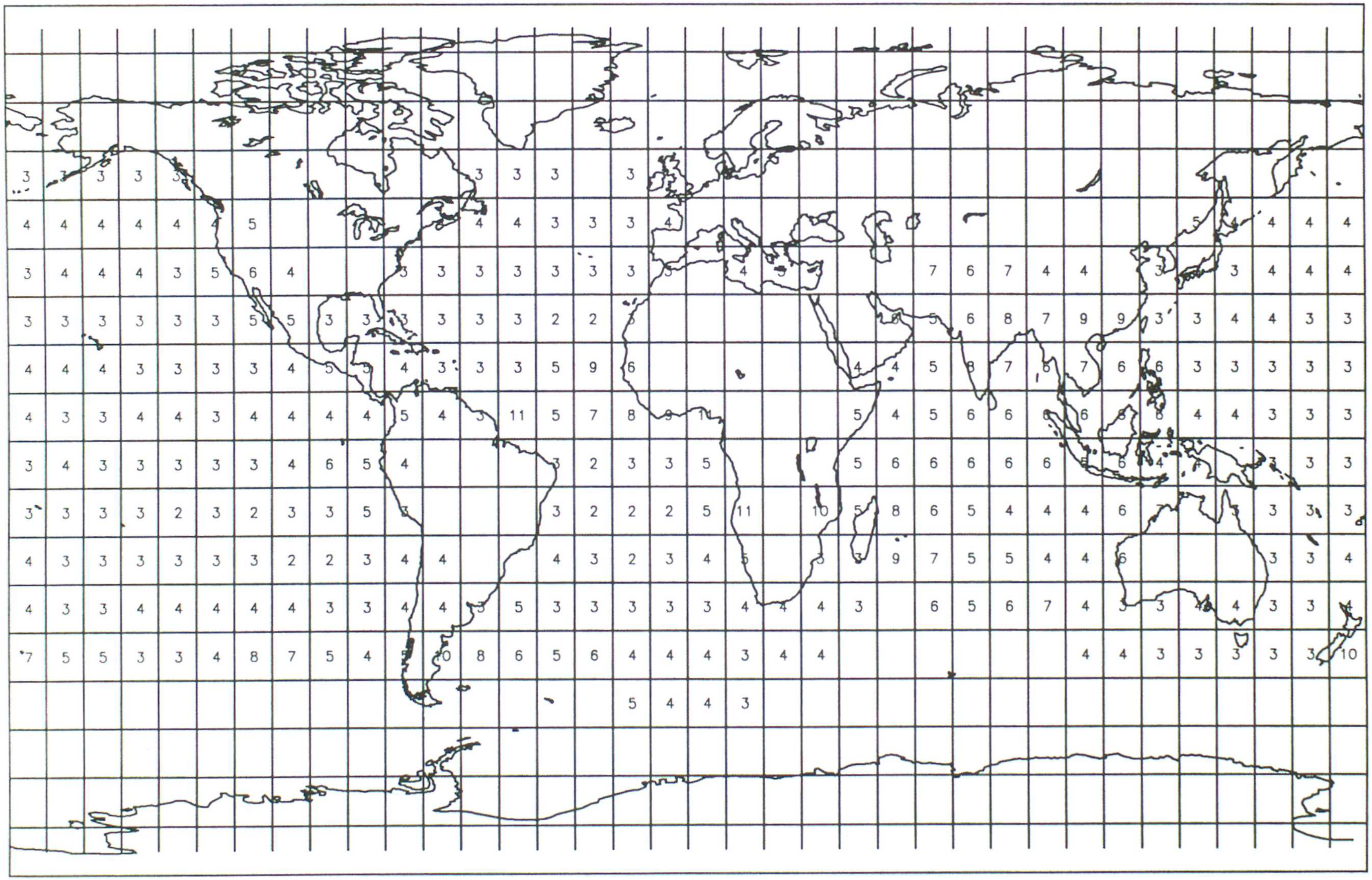
DECEMBER 1996

USING ALL OBSERVATIONS

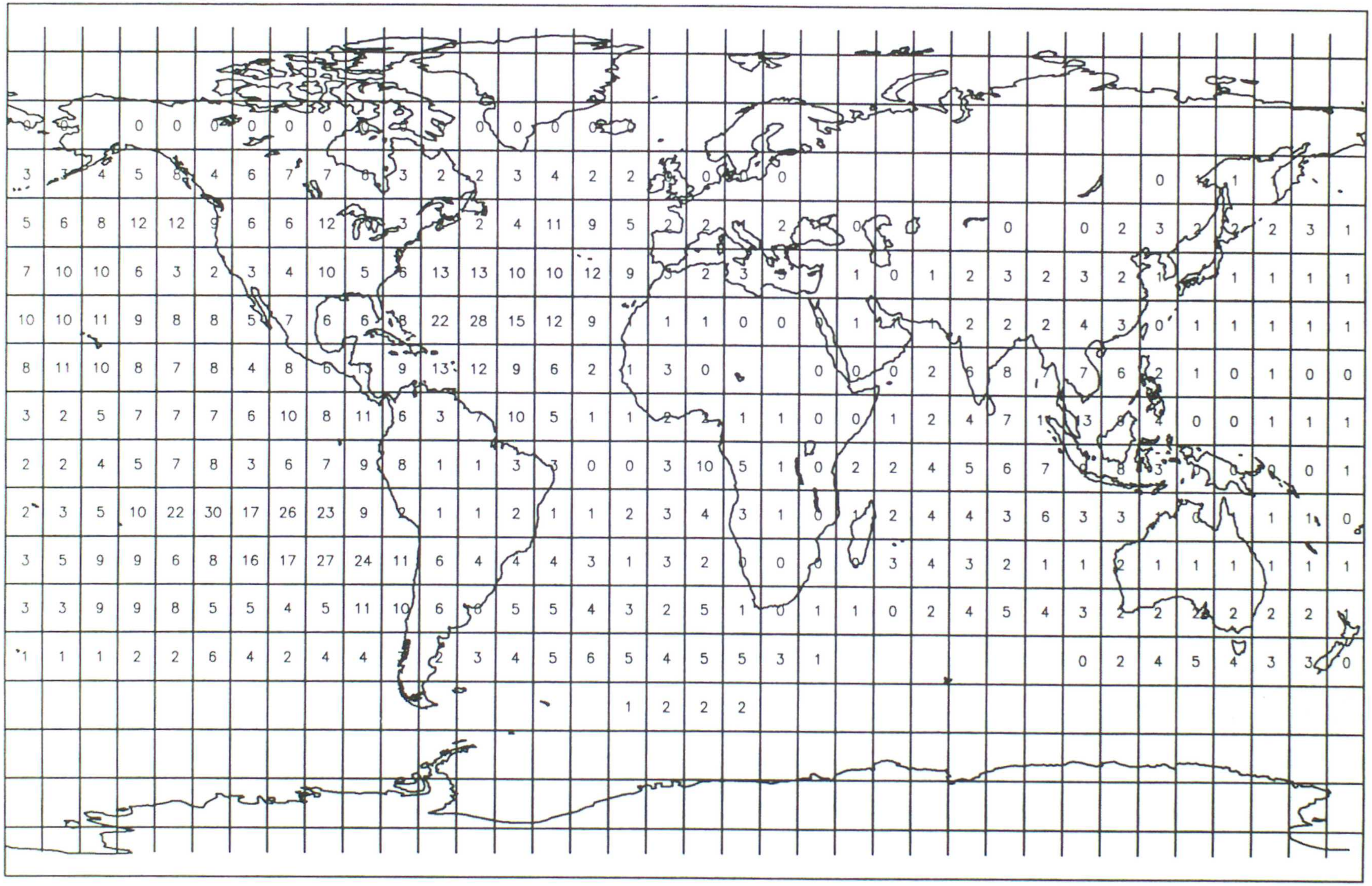
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


.0 .1 .3 .4 .1 .6 .4 .3 −1.4
.1 .4 .4 .6 .9 .1 −1.0 .1 −.5 −.6 −.5 .1 .0 −.8 −.6 −1.0 −.2 −.1 −.4
−.2 .4 −.1 .6 .0 −1.3 −2.6 −3.1 .1 .3 .4 −.7 −.4 .2 .1 .6 −1.4 −1.2 −1.1 4.1 1.6 −.8 −.7 1.2 −1.0 .3 .2 −.1 −.2
.6 .6 .2 .5 .3 .8 −.3 .1 .5 .3 .1 .6 .6 −.2 .3 −.1 −.7 3.3 3.0 3.0 3.1 2.4 3.0 3.2 .1 .1 .7 .9 .8 .3
.8 1.2 .5 .4 .5 .7 −.1 −1.0 −1.3 −1.2 −.2 .1 −.1 .0 .7 1.4 2.4 .1 .8 1.8 1.3 1.7 1.8 .0 .3 −.9 .3 .3 .0 .4 .8
−.4 −.8 −1.4 .0 .5 .0 .2 .7 .4 −.2 .2 2.1 1.9 1.5 .3 1.1 3.0 2.2 3.0 .0 .3 1.9 2.2 1.8 2.0 .7 3.1 2.4 .5 .4 .4 .3 .7
−.3 −.9 −1.1 −.5 −.7 −.2 .3 1.5 2.4 2.7 .7 .6 .1 .2 .7 1.0 1.7 1.3 1.8 1.1 1.1 1.5 .0 1.3 .6 .7 .7
−.7 −.4 .0 −.2 −.2 −.3 .3 .3 1.2 2.1 .1 .2 −.4 −.1 .2 1.5 .7 5.2 2.1 1.3 2.1 1.9 1.8 1.5 1.4 2.4 2 .4 −.3 .1
.2 −.1 .2 .6 .8 −.1 .2 .1 −.2 .4 1.3 −2.7 −.5 .0 .0 .1 .4 .6 .1 −.8 4.2 3.9 2.7 2.7 1.3 1.0 2.0 .3 1.3 −.1
.4 .1 −.2 .1 .4 −.1 −.3 −.2 .0 −.5 −.1 −3.3 .2 −.5 −.1 .6 .2 −.4 −.3 .0 .8 .3 −.6 2.7 1.4 1.5 .8 .7 .5 .4 .3 −.1 .6 .3 .6
.3 −.2 .3 −.5 −.2 −.1 1.8 .9 .6 .2 −1.3 −3.5 .8 .6 −.6 .0 −1.0 −1.0 −.8 −.2 −.8 −1.2 .5 .6 .4 .7 1.0 .5 .2 2.2
−1.9 −2.0 −.5 −1.0

SATOBS : RMS O–B VECTOR DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 14
DECEMBER 1996
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

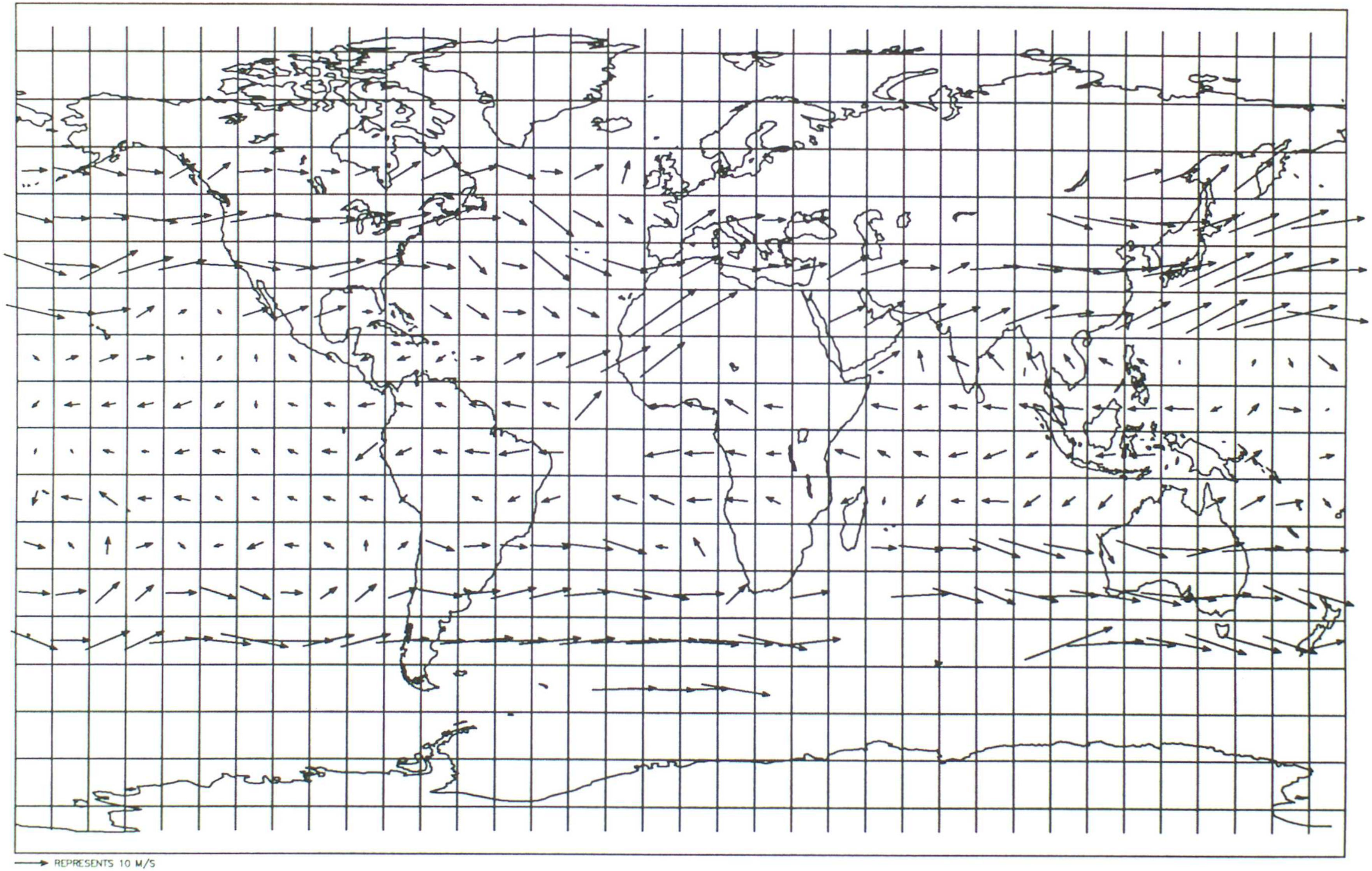

3 3 3 3 3 3 3 3 3
4 4 4 4 4 4 5 4 4 3 3 3 4 5 4 4 4 4
3 4 4 4 3 5 6 4 3 3 3 3 3 3 3 3 4 3 3 7 6 7 4 4 3 3 4 4 4
3 3 3 3 3 3 5 5 3 3 3 3 3 3 2 2 3 6 5 6 8 7 9 9 3 3 4 4 3 3
4 4 4 3 3 3 3 4 5 5 4 3 3 3 5 9 6 4 4 5 8 7 6 7 6 6 3 3 3 3 3
4 3 3 4 4 3 4 4 4 4 5 4 3 11 5 7 8 9 11 5 4 5 6 6 6 6 6 6 4 4 3 3 3
3 4 3 3 3 3 3 4 6 5 4 3 2 3 3 5 5 6 6 6 6 6 6 6 4 4 3 3 3
3 3 3 3 2 3 2 3 3 5 3 3 2 2 2 5 11 10 5 8 6 5 4 4 4 6 7 3 3 3 3
4 3 3 3 3 3 3 2 2 3 4 4 4 3 2 3 4 5 3 3 9 7 5 5 4 4 6 3 3 4
4 3 3 4 4 4 4 4 3 3 4 4 3 5 3 3 3 3 3 4 4 4 3 6 5 6 7 4 3 3 4 4 3 3 4
7 5 5 3 3 4 8 7 5 4 5 10 8 6 5 6 4 4 4 3 4 4 4 4 3 3 3 3 3 10
5 4 4 3

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 401 AND 700 HPA FIGURE 15
DECEMBER 1996


0 0 0 0 0 0 0 0 0 0 0 0 0
3 3 4 5 8 4 6 7 7 8 3 2 2 3 4 2 2 0 0 0 0 1
5 6 8 12 12 9 6 6 12 3 2 4 11 9 5 2 2 1 2 0 0 0 2 3 2 2 2 3 1
7 10 10 6 3 2 3 4 10 5 6 13 13 10 10 12 9 3 2 3 3 1 0 1 2 3 2 3 2 1 1 1 1 1
10 10 11 9 8 8 5 7 6 6 8 22 28 15 12 9 1 1 0 0 0 1 1 2 2 2 4 3 0 1 1 1 1 1
8 11 10 8 7 8 4 8 6 13 9 13 12 9 6 2 1 3 0 0 0 0 2 6 8 7 7 6 2 1 0 1 0 0
3 2 5 7 7 7 6 10 8 11 6 3 7 10 5 1 1 2 2 1 1 0 0 1 2 4 7 1 13 8 4 0 0 1 1 1
2 2 4 5 7 8 3 6 7 9 8 1 1 3 3 0 0 3 10 5 1 0 2 2 4 5 6 7 8 8 3 0 0 1
2 3 5 10 22 30 17 26 23 9 2 1 1 2 1 1 2 3 4 3 1 0 1 2 4 4 3 6 3 3 1 0 1 1 0
3 5 9 9 6 8 16 17 27 24 11 6 4 4 4 3 1 3 2 0 0 0 3 4 3 2 1 1 2 1 1 1 1 1
3 3 9 9 8 5 5 4 5 11 10 6 6 5 5 4 3 2 5 1 0 1 1 0 2 4 5 4 3 2 2 2 2 2 2 1
1 1 1 2 2 6 4 2 4 4 7 2 3 4 5 6 5 4 5 5 3 1 0 2 4 5 4 3 3 0
1 2 2 2

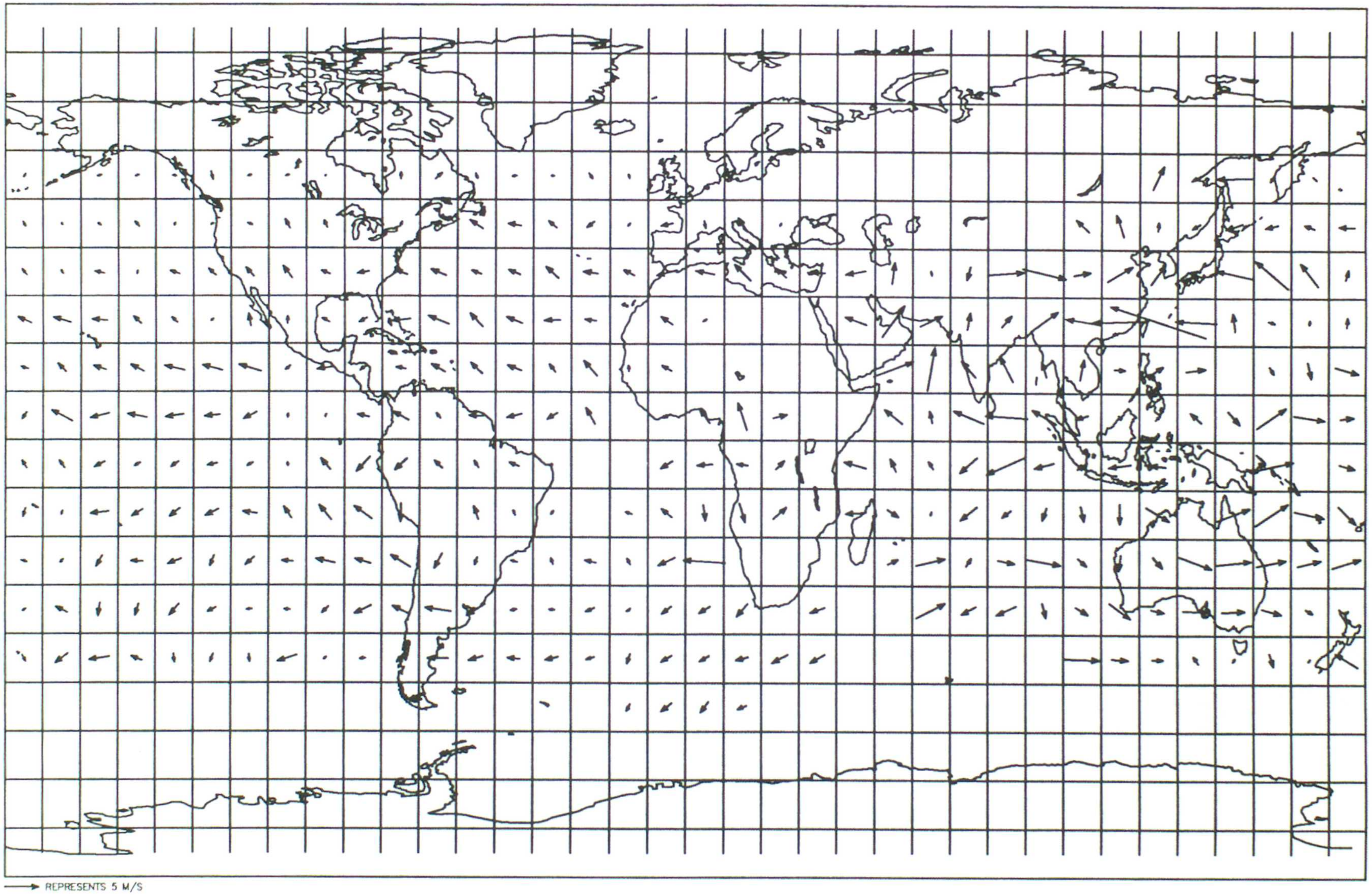
SATOB VECTOR MEAN WINDS BETWEEN 401–700 HPA
DECEMBER 1996
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 16

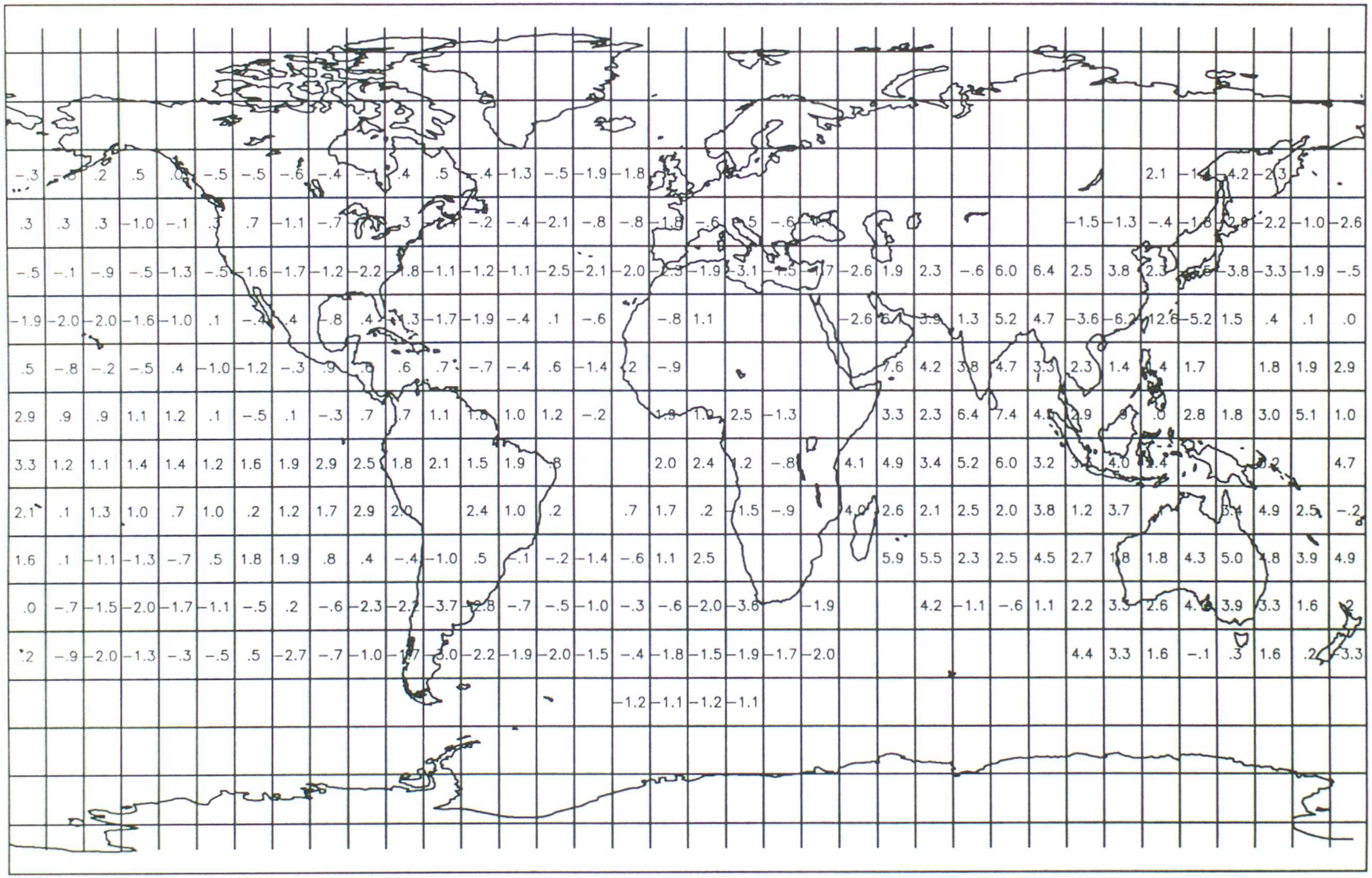

REPRESENTS 10 M/S

SATOB O−B VECTOR WIND DIFFERENCES BETWEEN 401−700 HPA
DECEMBER 1996
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 17



SATOBS : MEAN O−B SPEED DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 18
DECEMBER 1996
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

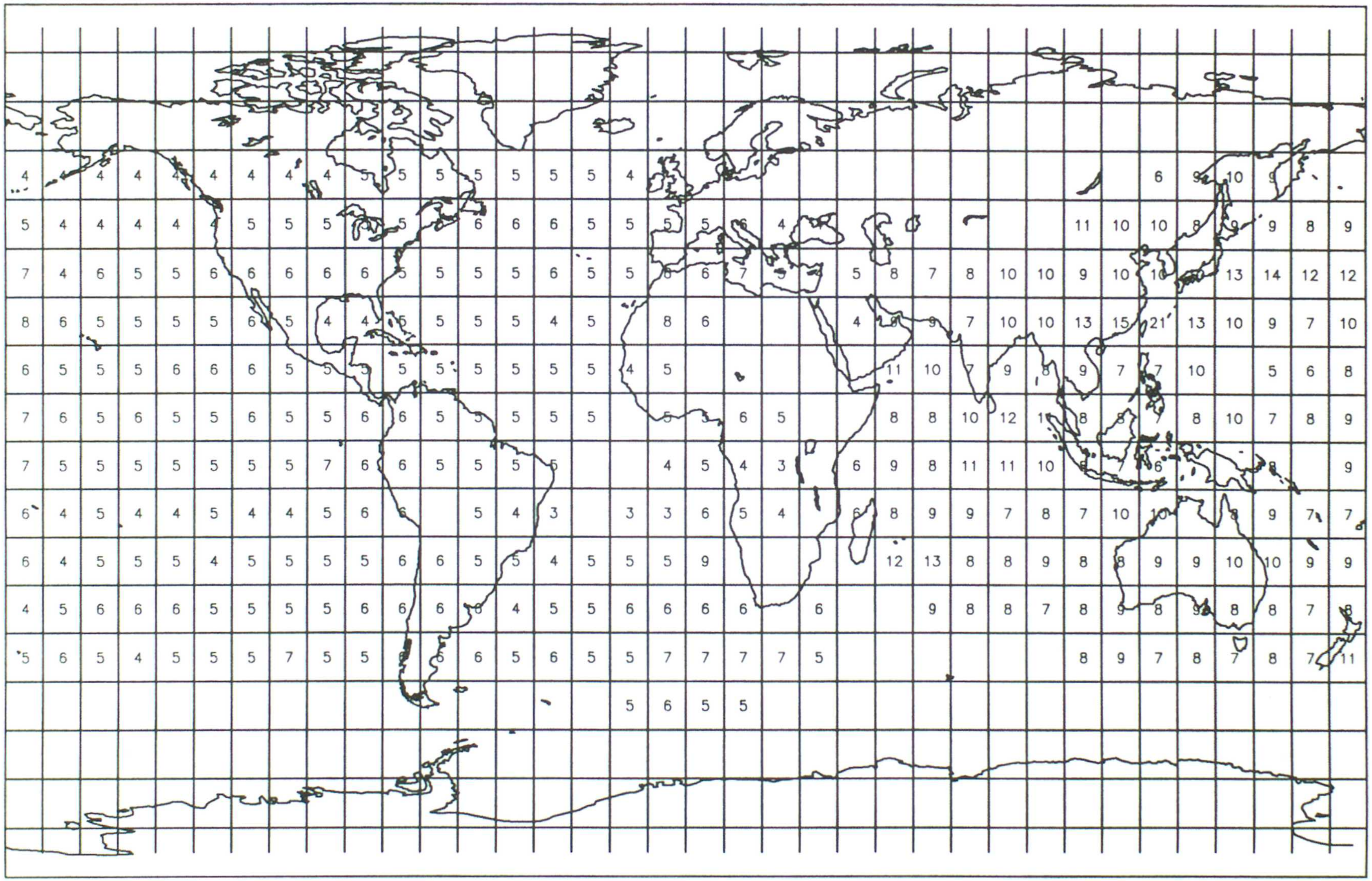

−.3 −.3 .2 .5 .0 −.5 −.5 −.6 −.4 −.1 .4 .5 −.4 −1.3 −.5 −1.9 −1.8 2.1 −1.4 −4.2 −2.3
.3 .3 .3 −1.0 −.1 .3 .7 −1.1 −.7 −.1 .3 −.4 −.2 −.4 −2.1 −.8 −.8 −1.8 −.6 .5 −.6 −.4 −1.5 −1.3 −.4 −1.8 −2.8 −2.2 −1.0 −2.6
−.5 −.1 −.9 −.5 −1.3 −.5 −1.6 −1.7 −1.2 −2.2 −1.8 −1.1 −1.2 −1.1 −2.5 −2.1 −2.0 −2.3 −1.9 −3.1 −1.5 −1.7 −2.6 1.9 2.3 −.6 6.0 6.4 2.5 3.8 2.3 −.5 −3.8 −3.3 −1.9 −.5
−1.9 −2.0 −2.0 −1.6 −1.0 .1 −.4 .4 −.8 .4 −1.3 −1.7 −1.9 −.4 .1 −.6 −.8 1.1 −2.6 6.1 3.9 1.3 5.2 4.7 −3.6 −6.2 12.6 −5.2 1.5 .4 .1 .0
.5 −.8 −.2 −.5 .4 −1.0 −1.2 −.3 .9 .6 .6 .7 −.7 −.4 .6 −1.4 .2 −.9 7.6 4.2 3.8 4.7 3.3 2.3 1.4 .4 1.7 1.8 1.9 2.9
2.9 .9 .9 1.1 1.2 .1 −.5 .1 −.3 .7 .7 1.1 1.8 1.0 1.2 −.2 1.9 1.2 2.5 −1.3 3.3 2.3 6.4 7.4 4.5 2.9 .9 .0 2.8 1.8 3.0 5.1 1.0
3.3 1.2 1.1 1.4 1.4 1.2 1.6 1.9 2.9 2.5 1.8 2.1 1.5 1.9 .8 2.0 2.4 1.2 −.8 4.1 4.9 3.4 5.2 6.0 3.2 3.4 4.0 2.4 3.2 4.7
2.1 .1 1.3 1.0 .7 1.0 .2 1.2 1.7 2.9 2.0 2.4 1.0 .2 .7 1.7 .2 −1.5 −.9 4.0 2.6 2.1 2.5 2.0 3.8 1.2 3.7 3.4 4.9 2.5 −.2
1.6 .1 −1.1 −1.3 −.7 .5 1.8 1.9 .8 .4 −.4 −1.0 .5 −.1 −.2 −1.4 −.6 1.1 2.5 5.9 5.5 2.3 2.5 4.5 2.7 1.8 1.8 4.3 5.0 4.8 3.9 4.9
.0 −.7 −1.5 −2.0 −1.7 −1.1 −.5 .2 −.6 −2.3 −2.2 −3.7 −2.8 −.7 −.5 −1.0 −.3 −.6 −2.0 −3.6 −1.9 4.2 −1.1 −.6 1.1 2.2 3.3 2.6 4.6 3.9 3.3 1.6 .2
.2 −.9 −2.0 −1.3 −.3 −.5 .5 −2.7 −.7 −1.0 −1.7 −3.0 −2.2 −1.9 −2.0 −1.5 −.4 −1.8 −1.5 −1.9 −1.7 −2.0 4.4 3.3 1.6 −.1 .3 1.6 .2 −3.3
−1.2 −1.1 −1.2 −1.1

SATOBS : RMS O–B VECTOR DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 19

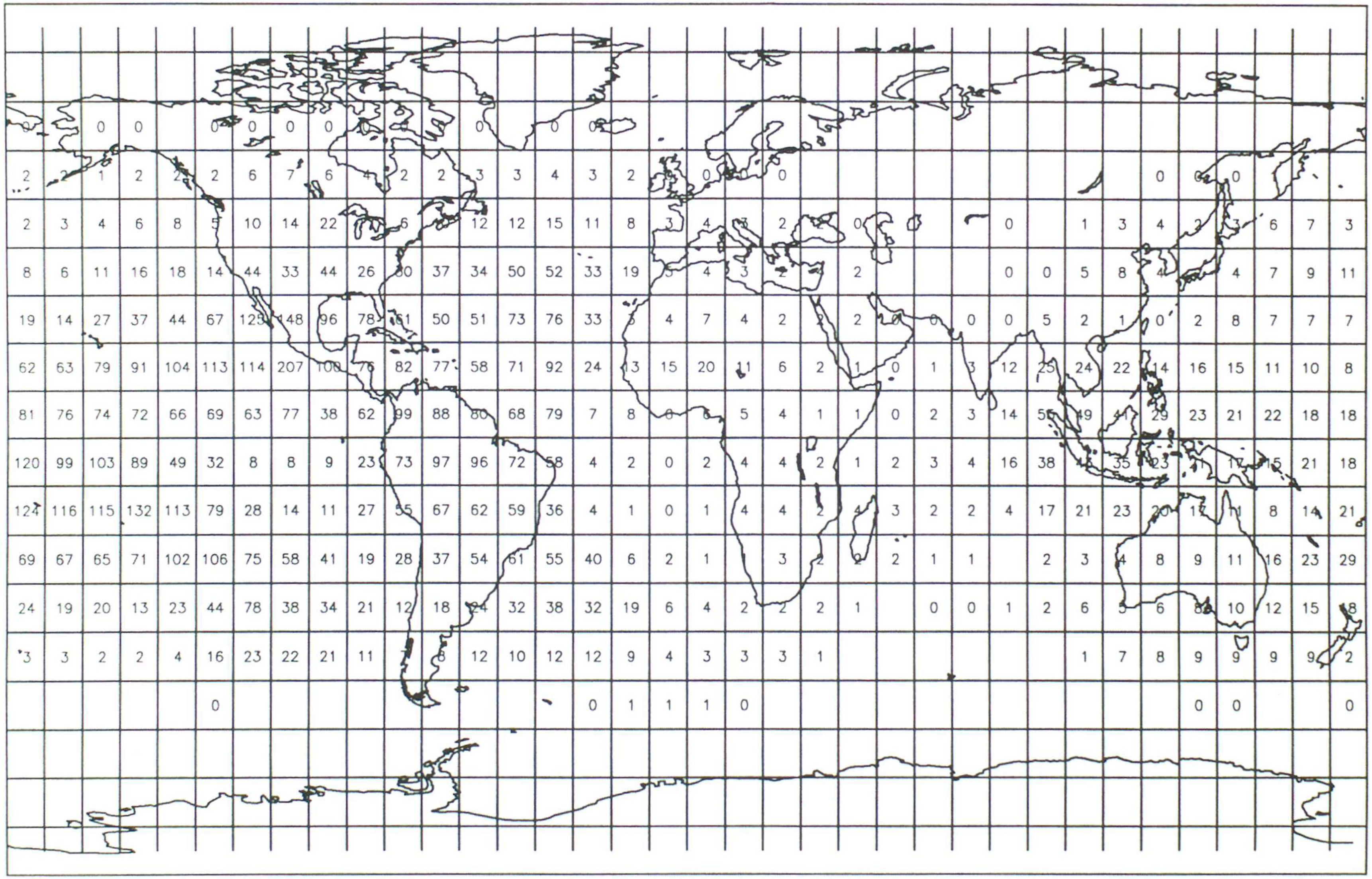
DECEMBER 1996

USING ALL OBSERVATIONS

VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


4 4 4 4 4 4 4 4 4 5 5 5 5 5 5 5 4 6 9 10 9
5 4 4 4 4 4 5 5 5 5 5 6 6 6 5 5 5 5 6 4 11 10 10 8 9 9 8 9
7 4 6 5 5 6 6 6 6 6 5 5 5 5 6 5 5 6 6 7 5 4 5 8 7 8 10 10 9 10 10 13 14 12 12
8 6 5 5 5 5 6 5 4 4 5 5 5 5 4 5 8 6 4 8 9 7 10 10 13 15 21 13 10 9 7 10
6 5 5 5 6 6 6 5 5 5 5 5 5 5 5 5 4 5 11 10 7 9 8 9 7 7 10 5 6 8
7 6 5 6 5 5 6 5 5 6 6 5 5 5 5 5 5 3 6 5 8 8 10 12 11 8 8 7 8 10 7 8 9
7 5 5 5 5 5 5 5 7 6 6 5 5 5 5 4 5 4 3 6 9 8 11 11 10 8 7 6 8 9
6 4 5 4 4 5 4 4 5 6 6 5 4 3 3 3 6 5 4 6 8 9 9 7 8 7 10 10 8 9 7 7
6 4 5 5 5 4 5 5 5 5 6 6 5 5 4 5 5 5 9 12 13 8 8 9 8 8 9 9 10 10 9 9
4 5 6 6 6 5 5 5 5 6 6 6 6 4 5 5 6 6 6 6 6 9 8 8 7 8 9 8 9 8 8 7 8
5 6 5 4 5 5 5 7 5 5 6 6 6 5 6 5 5 7 7 7 7 5 8 9 7 8 7 8 7 11
5 6 5 5

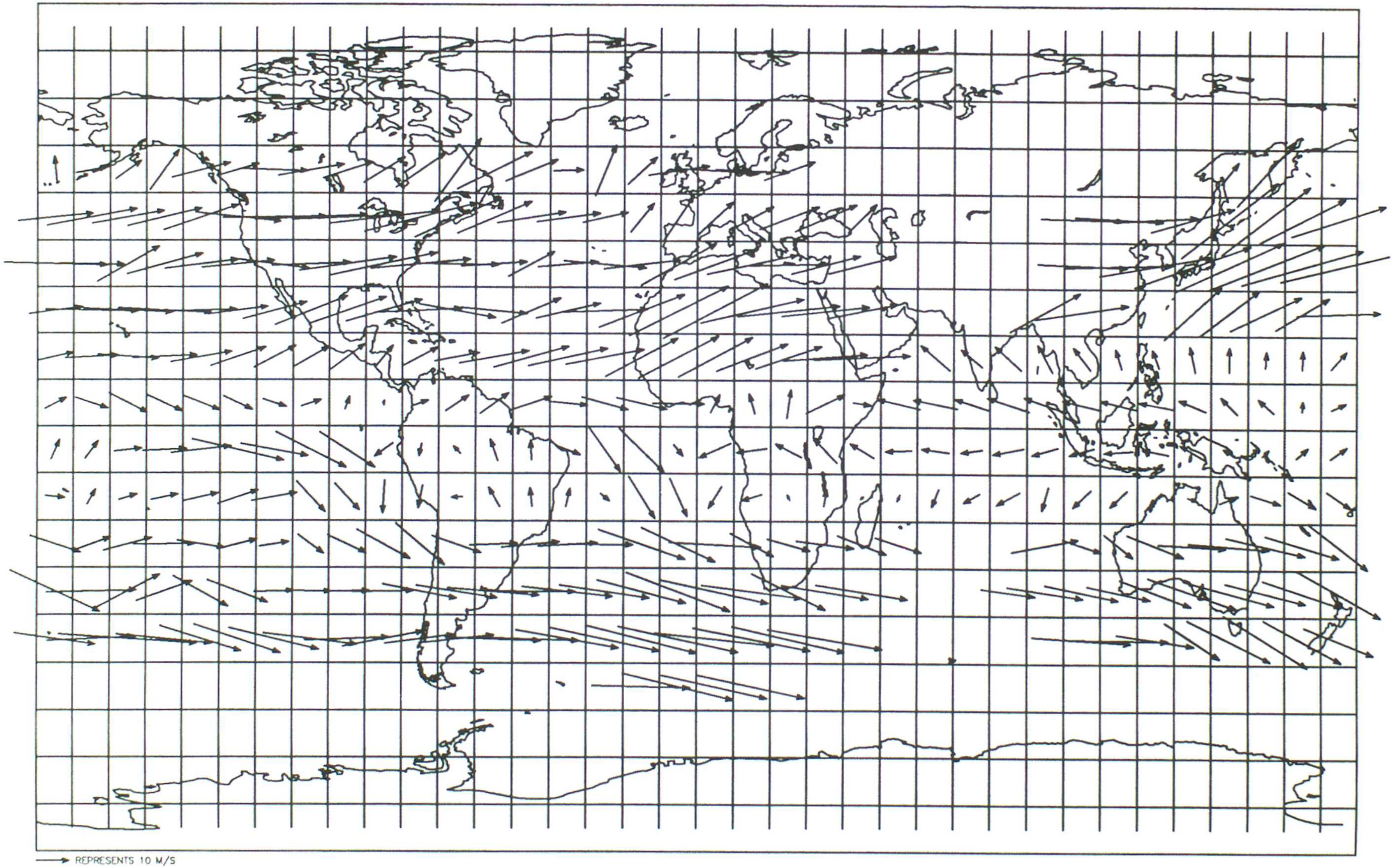
AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 101 AND 400 HPA FIGURE 20
DECEMBER 1996



0		0	0		0	0	0	0	0	0		0		0	0																				
2	2	1	2	2	2	6	7	6	4	2	2	3	3	4	3	2	0	0	0	0										0	0	0			
2	3	4	6	8	5	10	14	22		6		12	12	15	11	8	3	4	3	2	2	0				0		1	3	4	2	3	6	7	3
8	6	11	16	18	14	44	33	44	26	30	37	34	50	52	33	19	5	4	3	2	4	2				0	0	5	8	4		4	7	9	11
19	14	27	37	44	67	125	148	96	78	61	50	51	73	76	33	3	4	7	4	2	2	2	0	0	0	0	5	2	1	0	2	8	7	7	7
62	63	79	91	104	113	114	207	100	76	82	77	58	71	92	24	13	15	20	11	6	2	1	0	1	3	12	25	24	22	14	16	15	11	10	8
81	76	74	72	66	69	63	77	38	62	99	88	80	68	79	7	8	0	6	5	4	1	1	0	2	3	14	55	49	41	29	23	21	22	18	18
120	99	103	89	49	32	8	8	9	23	73	97	96	72	58	4	2	0	2	4	4	2	1	2	3	4	16	38	45	35	23	11	17	15	21	18
124	116	115	132	113	79	28	14	11	27	55	67	62	59	36	4	1	0	1	4	4	2	4	3	2	2	4	17	21	23	20	17	11	8	14	21
69	67	65	71	102	106	75	58	41	19	28	37	54	61	55	40	6	2	1		3	2	2	2	1	1		2	3	4	8	9	11	16	23	29
24	19	20	13	23	44	78	38	34	21	12	18	24	32	38	32	19	6	4	2	2	2	1		0	0	1	2	6	5	6	8	10	12	15	18
3	3	2	2	4	16	23	22	21	11	7	8	12	10	12	12	9	4	3	3	3	1							1	7	8	9	9	9	9	2
					0										0	1	1	1	0												0	0			0

SATOB VECTOR MEAN WINDS BETWEEN 101–400 HPA
DECEMBER 1996
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 21


REPRESENTS 10 M/S

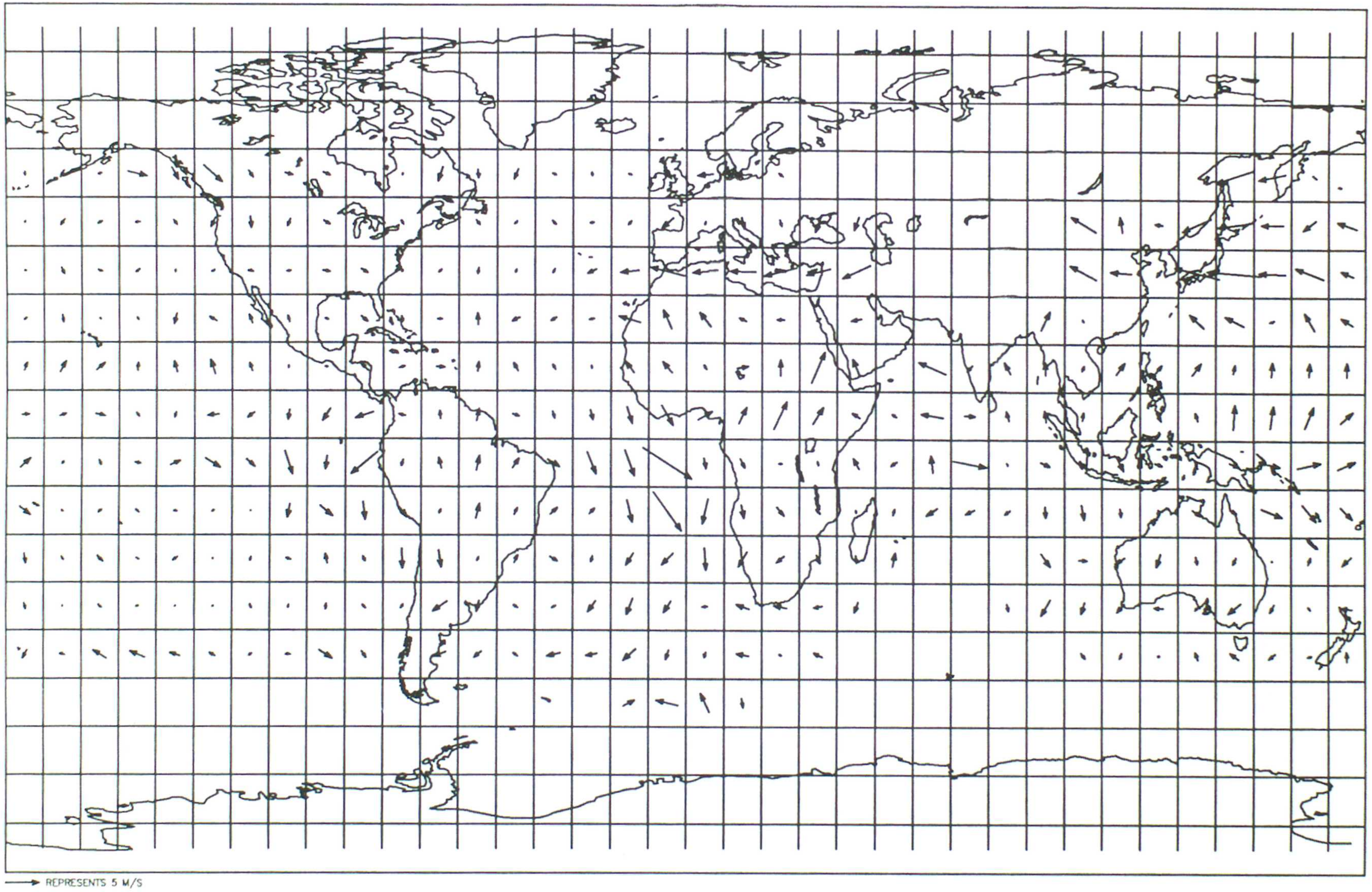
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 101-400 HPA

DECEMBER 1996

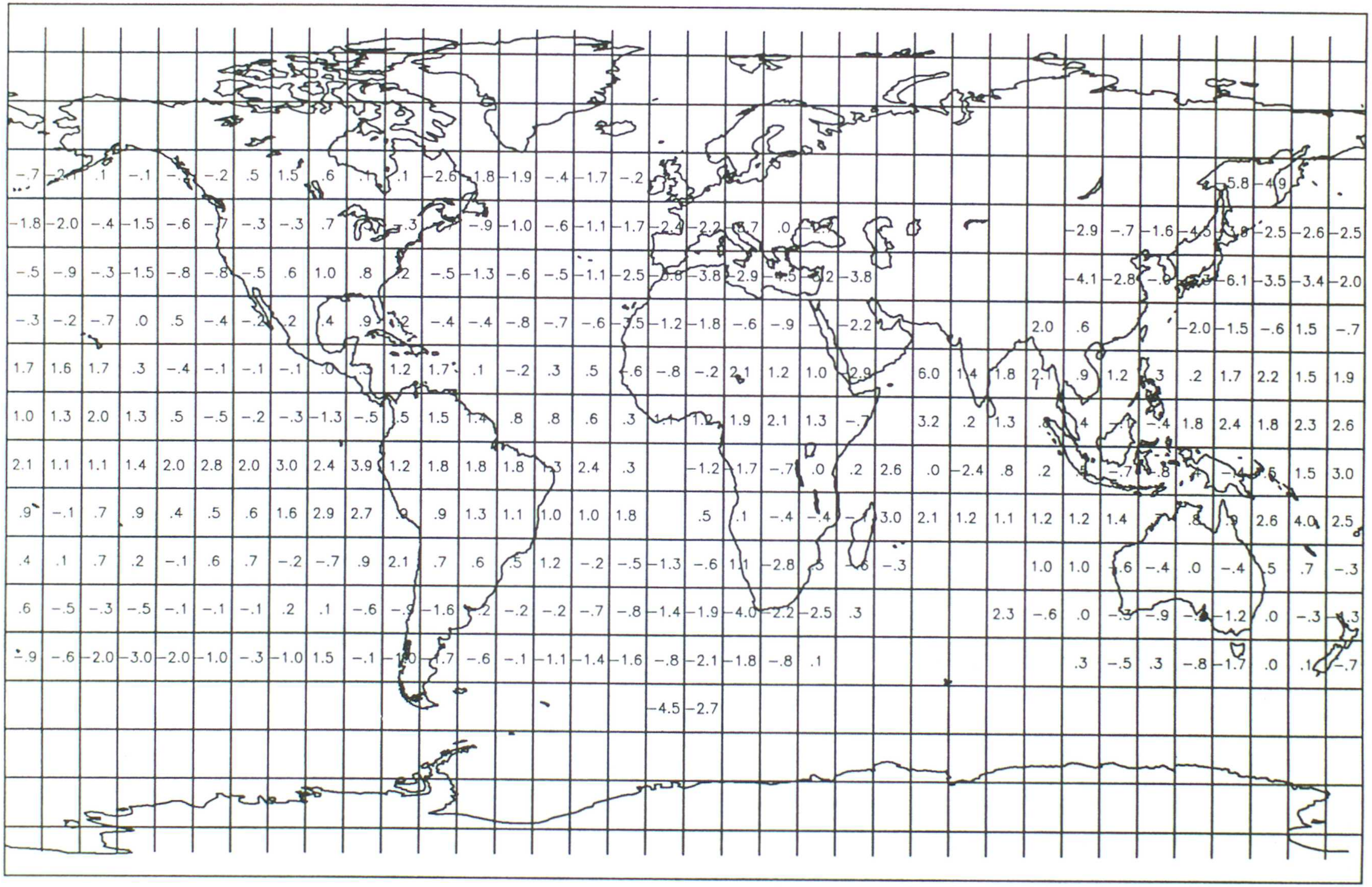
ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 22

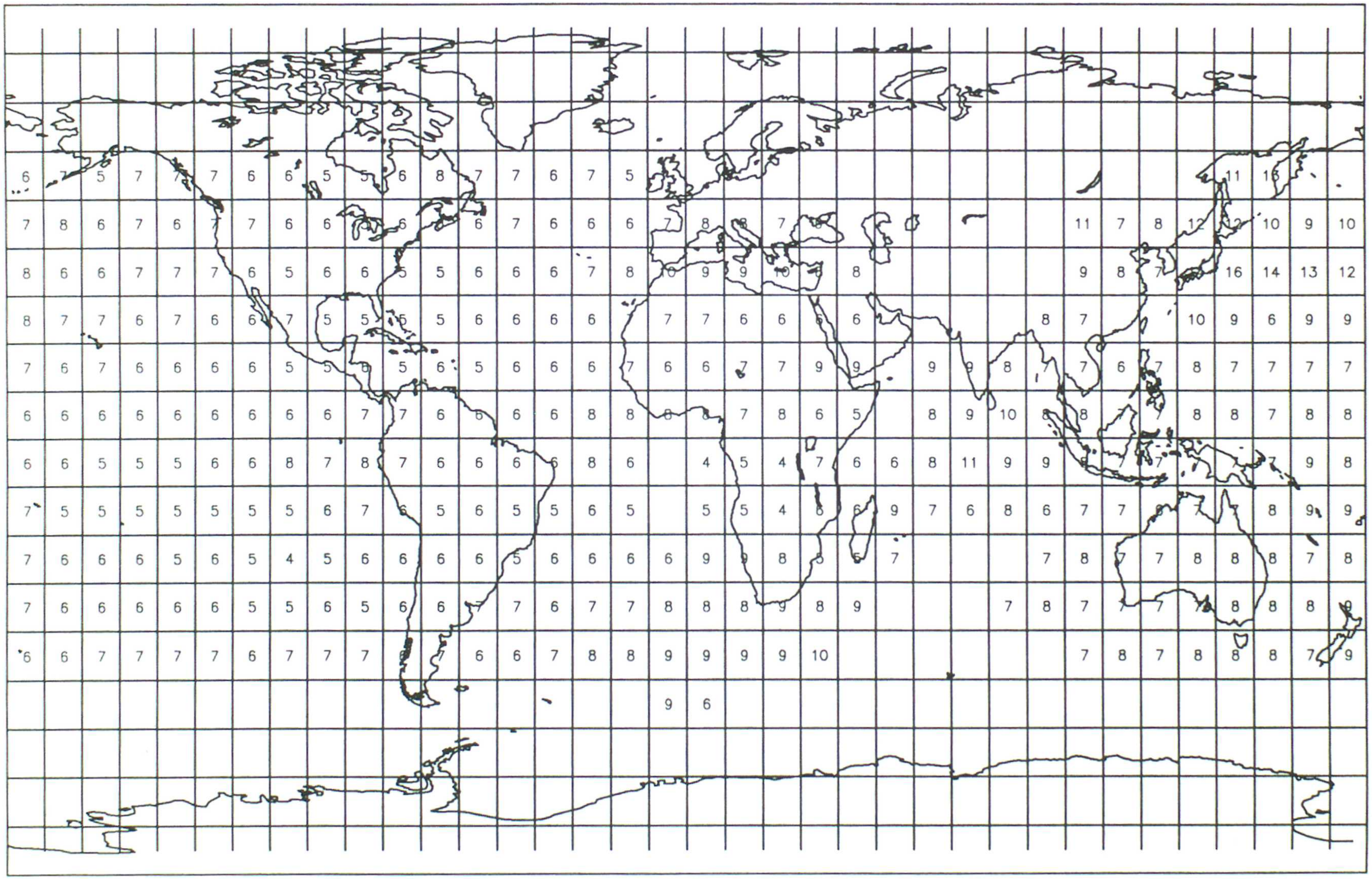


SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 23
DECEMBER 1996
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



-.7 -2.1 .1 -.1 -. -.2 .5 1.5 .6 .1 .1 -2.6 -1.8 -1.9 -.4 -1.7 -.2 -5.8 -4.9
-1.8 -2.0 -.4 -1.5 -.6 -.7 -.3 -.3 .7 -.3 -.9 -1.0 -.6 -1.1 -1.7 -2.4 -2.2 .7 .0 -2.7 -2.9 -.7 -1.6 -4.5 -3.8 -2.5 -2.6 -2.5
-.5 -.9 -.3 -1.5 -.8 -.8 -.5 .6 1.0 .8 .2 -.5 -1.3 -.6 -.5 -1.1 -2.5 -3.8 -3.8 -2.9 -1.5 -3.2 -3.8 -4.1 -2.8 -.9 -3.3 -6.1 -3.5 -3.4 -2.0
-.3 -.2 -.7 .0 .5 -.4 -.2 .2 .4 .9 1.2 -.4 -.4 -.8 -.7 -.6 -3.5 -1.2 -1.8 -.6 -.9 -2.2 2.0 .6 -2.0 -1.5 -.6 1.5 -.7
1.7 1.6 1.7 .3 -.4 -.1 -.1 -.1 .0 .3 1.2 1.7 .1 -.2 .3 .5 -.6 -.8 -.2 2.1 1.2 1.0 2.9 6.0 1.4 1.8 2.1 .9 1.2 .3 .2 1.7 2.2 1.5 1.9
1.0 1.3 2.0 1.3 .5 -.5 -.2 -.3 -1.3 -.5 .5 1.5 1.4 .8 .8 .6 .3 1.1 1.2 1.9 2.1 1.3 -.7 3.2 .2 1.3 .8 .4 -.1 -.4 1.8 2.4 1.8 2.3 2.6
2.1 1.1 1.1 1.4 2.0 2.8 2.0 3.0 2.4 3.9 1.2 1.8 1.8 1.8 1.3 2.4 .3 -1.2 -1.7 -.7 .0 .2 2.6 .0 -2.4 .8 .2 .5 -.7 -.8 .4 -.4 .6 1.5 3.0
.9 -.1 .7 .9 .4 .5 .6 1.6 2.9 2.7 .9 .9 1.3 1.1 1.0 1.0 1.8 .5 .1 -.4 -.4 -.1 3.0 2.1 1.2 1.1 1.2 1.2 1.4 .7 .8 .9 2.6 4.0 2.5
.4 .1 .7 .2 -.1 .6 .7 -.2 -.7 .9 2.1 .7 .6 .5 1.2 -.2 -.5 -1.3 -.6 1.1 -2.8 .5 -.6 -.3 1.0 1.0 -.6 -.4 .0 -.4 .5 .7 -.3
.6 -.5 -.3 -.5 -.1 -.1 -.1 .2 .1 -.6 -.9 -1.6 .2 -.2 -.2 -.7 -.8 -1.4 -1.9 -4.0 -2.2 -2.5 .3 2.3 -.6 .0 -.3 -.9 -1.4 -1.2 .0 -.3 -.3
-.9 -.6 -2.0 -3.0 -2.0 -1.0 -.3 -1.0 1.5 -.1 -1.0 -.7 -.6 -.1 -1.1 -1.4 -1.6 -.8 -2.1 -1.8 -.8 .1 .3 -.5 .3 -.8 -1.7 .0 .1 -.7
-4.5 -2.7

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 24
DECEMBER 1996
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

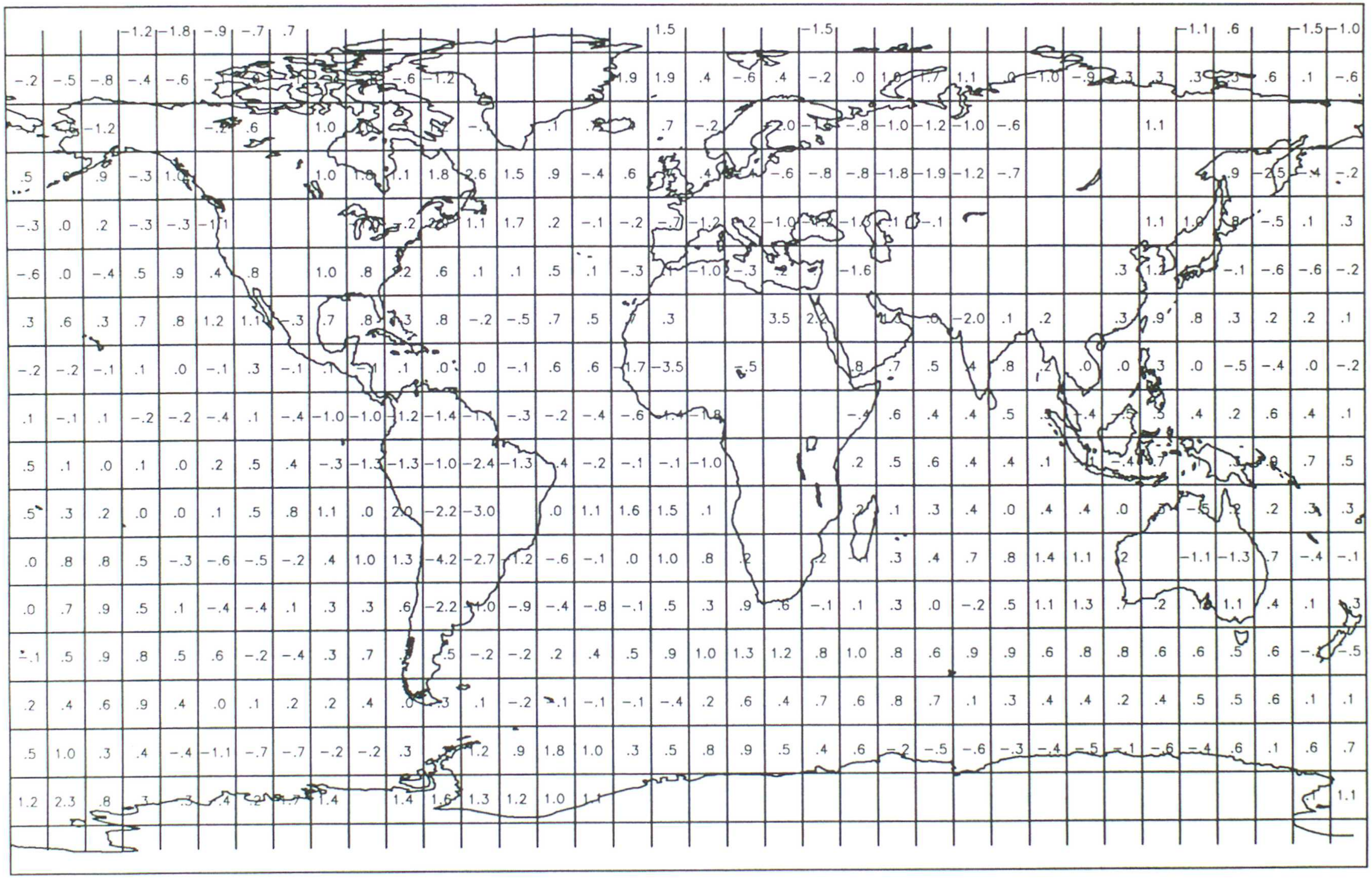
MONTH: December, 1996

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from NOAA-12, NOAA-14 500 km.
Standard of comparison	:Background field from Bracknell global model.
Selection Criteria	:All SATEM soundings where number of observations > 30.
Data Extracted	:Layer: 850 - 1000 hPa 100 - 300 hPa 30 - 50 hPa
	:Mean observation minus background temperature differences

500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 850 TO 1000 HPA
DECEMBER 1996
NOAA–12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 25

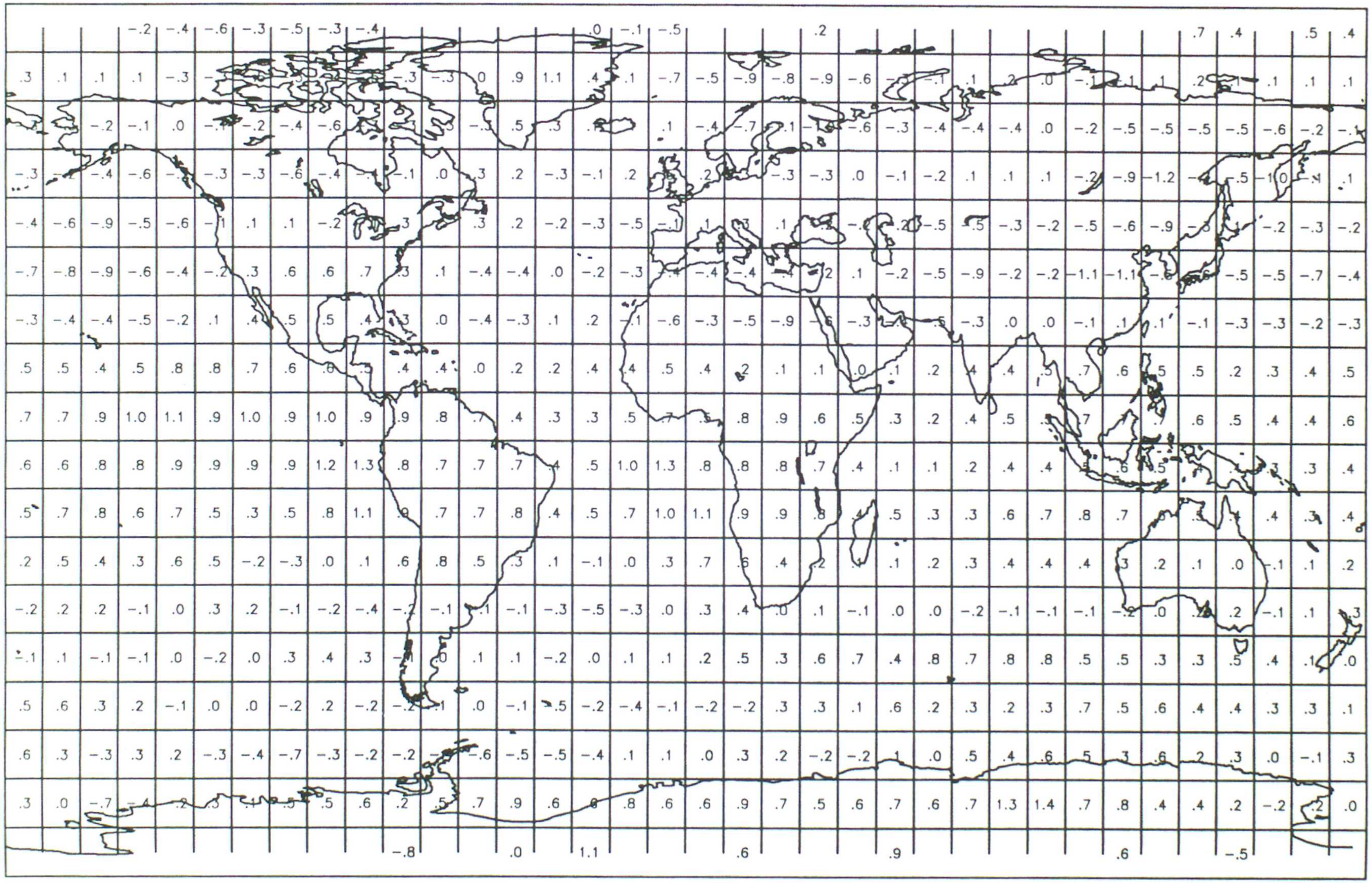


500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 100 TO 300 HPA

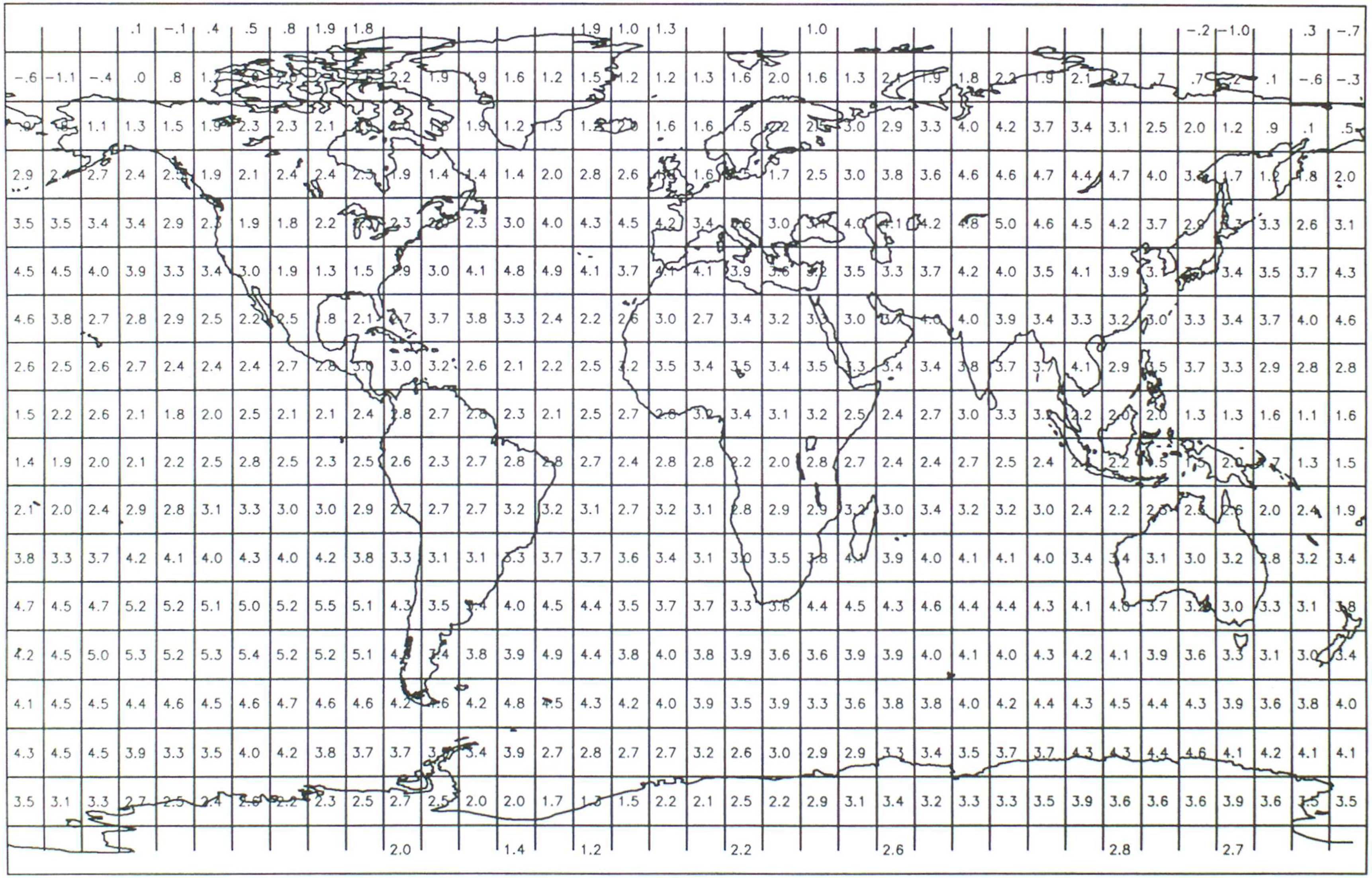
DECEMBER 1996 FIGURE 26

NOAA–12, USING ALL OBSERVATIONS

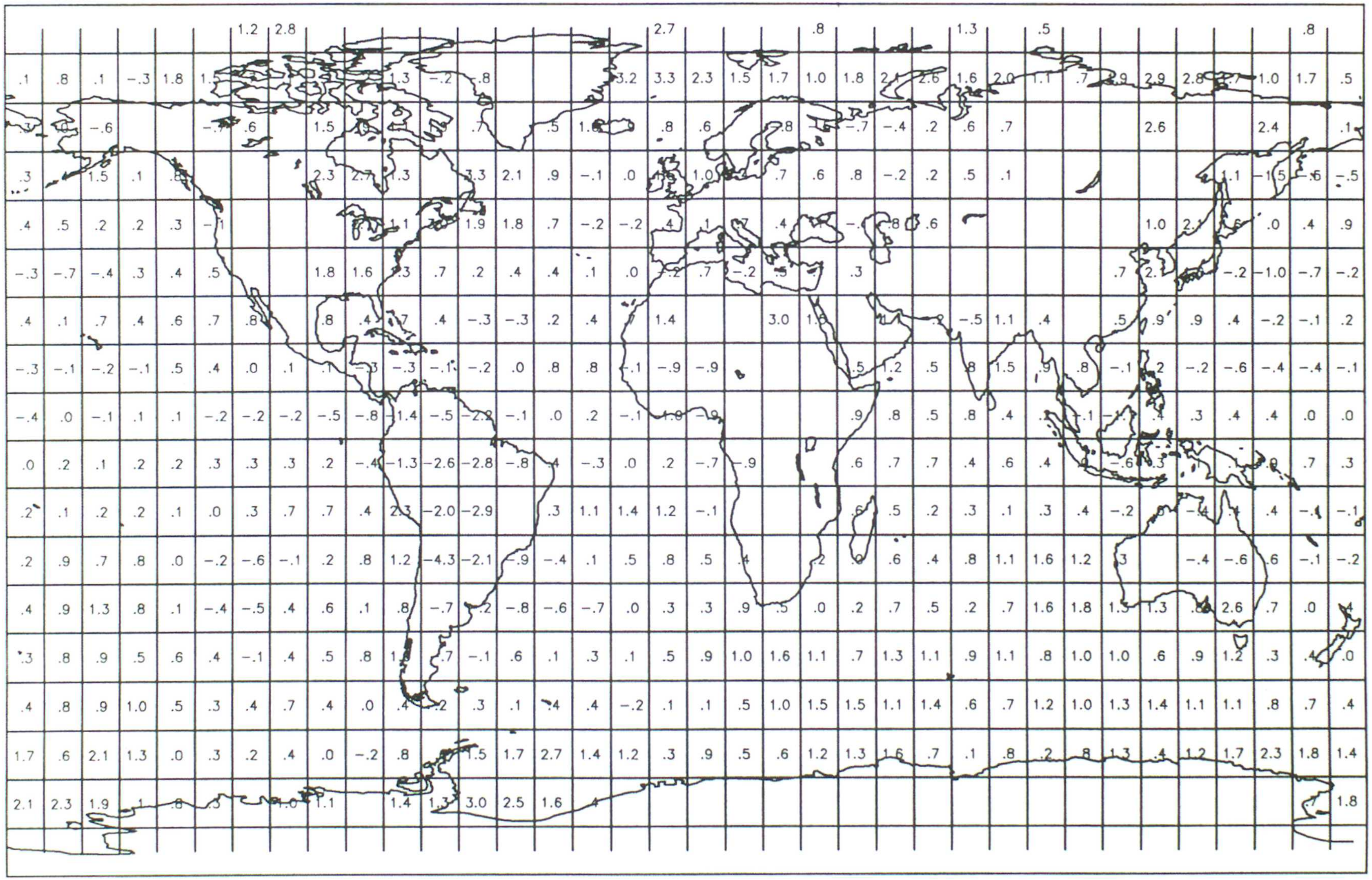
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT


–.2 –.4 –.6 –.3 –.5 –.3 –.4 .0 –.1 –.5 .2 .7 .4 .5 .4
.3 .1 .1 .1 –.3 –.3 –.3 .0 .9 1.1 .4 .1 –.7 –.5 –.9 –.8 –.9 –.6 .1 .2 .0 –.1 .1 .1 .2 .1 .1 .1
–.2 –.1 .0 –.2 –.4 –.6 –.3 .5 .3 .1 –.4 –.7 .1 –.6 –.3 –.4 –.4 –.4 .0 –.2 –.5 –.5 –.5 –.5 –.6 –.2
–.3 –.4 –.6 –.3 –.3 –.6 –.4 –.1 .0 .3 .2 –.3 –.1 .2 .2 –.3 –.3 .0 –.1 –.2 .1 .1 .1 –.2 –.9 –1.2 –.5 –1.0 .1
–.4 –.6 –.9 –.5 –.6 –.1 .1 .1 –.2 .3 .3 .2 –.2 –.3 –.5 –.1 .1 .1 .2 –.5 .5 –.3 –.2 –.5 –.6 –.9 –.2 –.3 –.2
–.7 –.8 –.9 –.6 –.4 –.2 .3 .6 .6 .7 .3 .1 –.4 –.4 .0 –.2 –.3 –.4 –.4 .2 .1 –.2 –.5 –.9 –.2 –.2 –1.1 –1.1 –.6 –.5 –.5 –.7 –.4
–.3 –.4 –.4 –.5 –.2 .1 .4 .5 .5 .4 .3 .0 –.4 –.3 .1 .2 .1 –.6 –.3 –.5 –.9 –.6 –.3 –.5 –.3 .0 .0 –.1 .1 .1 –.1 –.3 –.3 –.2 –.3
.5 .5 .4 .5 .8 .8 .7 .6 .6 .4 .4 .0 .2 .2 .4 .4 .5 .4 .2 .1 .1 .0 .1 .2 .4 .4 .5 .7 .6 .5 .5 .2 .3 .4 .5
.7 .7 .9 1.0 1.1 .9 1.0 .9 1.0 .9 .9 .8 .7 .4 .3 .3 .5 .7 .5 .8 .9 .6 .5 .3 .2 .4 .5 .7 .6 .5 .4 .4 .6
.6 .6 .8 .8 .9 .9 .9 .9 1.2 1.3 .8 .7 .7 .7 .4 .5 1.0 1.3 .8 .8 .8 .7 .4 .1 .1 .2 .4 .4 .6 .5 .3 .3 .4
.5 .7 .8 .6 .7 .5 .3 .5 .8 1.1 .9 .7 .7 .8 .4 .5 .7 1.0 1.1 .9 .9 .8 .4 .5 .3 .3 .6 .7 .8 .7 .4 .3 .4
.2 .5 .4 .3 .6 .5 –.2 –.3 .0 .1 .6 .8 .5 .3 .1 –.1 .0 .3 .7 .6 .4 .2 .1 .1 .2 .3 .4 .4 .4 .3 .2 .1 .0 .1 .1 .2
–.2 .2 .2 –.1 .0 .3 .2 –.1 –.2 –.4 –.2 –.1 .1 –.1 –.3 –.5 –.3 .0 .3 .4 .0 .1 –.1 .0 .0 –.2 –.1 –.1 –.1 –.2 .0 .2 .2 –.1 .1 .3
–.1 .1 –.1 –.1 .0 –.2 .0 .3 .4 .3 –.1 .0 .1 .1 –.2 .0 .1 .1 .2 .5 .3 .6 .7 .4 .8 .7 .8 .8 .5 .5 .3 .3 .5 .4 .1 .0
.5 .6 .3 .2 –.1 .0 .0 –.2 .2 –.2 –.2 .1 .0 –.1 .5 –.2 –.4 –.1 –.2 –.2 .3 .3 .1 .6 .2 .3 .2 .3 .7 .5 .6 .4 .4 .3 .3 .1
.6 .3 –.3 .3 .2 –.3 –.4 –.7 –.3 –.2 –.2 –.6 –.5 –.5 –.4 .1 .1 .0 .3 .2 –.2 –.2 .1 .0 .5 .4 .6 .5 .3 .6 .2 .3 .0 –.1 .3
.3 .0 –.7 –.4 .2 .3 .1 .5 .5 .6 .2 .5 .7 .9 .6 .6 .8 .6 .6 .9 .7 .5 .6 .7 .6 .7 1.3 1.4 .7 .8 .4 .4 .2 –.2 .2 .0
–.8 .0 1.1 .6 .9 .6 –.5

500 KM SATEMS : MEAN O-B TEMPERATURE DIFFERENCES (DEG C) : 30 TO 50 HPA
DECEMBER 1996 FIGURE 27
NOAA-12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

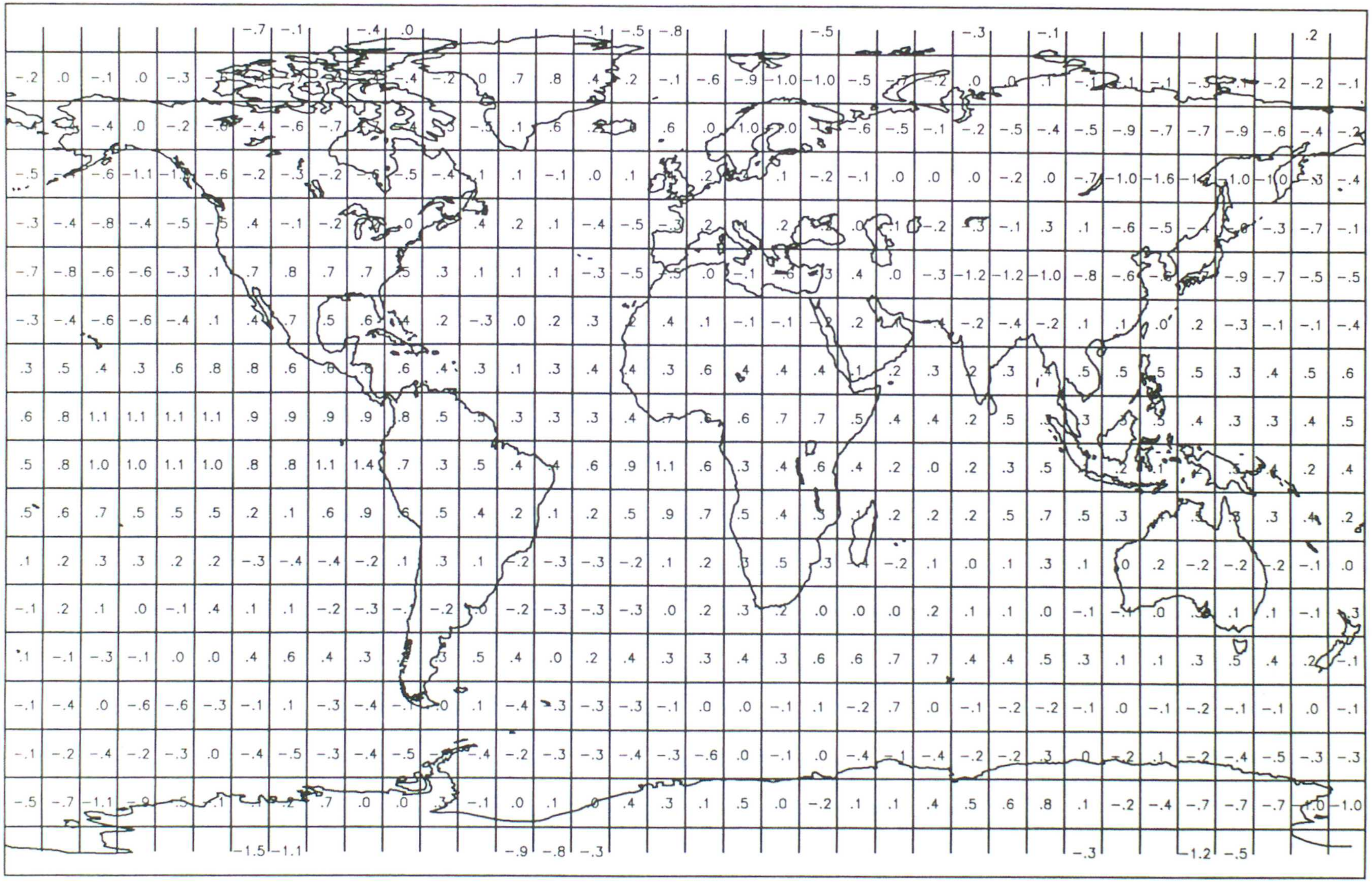

.1 -.1 .4 .5 .8 1.9 1.8 1.9 1.0 1.3 1.0 -.2 -1.0 .3 -.7
-.6 -1.1 -.4 .0 .8 2.2 1.9 .9 1.6 1.2 1.5 1.2 1.2 1.3 1.6 2.0 1.6 1.3 1.9 1.8 2.2 1.9 2.1 .7 .7 .7 .1 -.6 -.3
1.1 1.3 1.5 1.9 2.3 2.3 2.1 1.9 1.2 1.3 1.6 1.6 1.5 2.2 3.0 2.9 3.3 4.0 4.2 3.7 3.4 3.1 2.5 2.0 1.2 .9 .1 .5
2.9 2.4 2.7 2.4 2.5 1.9 2.1 2.4 2.4 2.5 1.9 1.4 1.4 1.4 2.0 2.8 2.6 1.6 1.7 2.5 3.0 3.8 3.6 4.6 4.6 4.7 4.4 4.7 4.0 3.4 1.7 1.2 1.8 2.0
3.5 3.5 3.4 3.4 2.9 2.3 1.9 1.8 2.2 2.3 2.3 2.3 3.0 4.0 4.3 4.5 4.2 3.4 2.6 3.0 3.4 4.0 4.1 4.2 4.8 5.0 4.6 4.5 4.2 3.7 2.8 3.3 2.6 3.1
4.5 4.5 4.0 3.9 3.3 3.4 3.0 1.9 1.3 1.5 1.9 3.0 4.1 4.8 4.9 4.1 3.7 4.1 4.1 3.9 3.6 3.2 3.5 3.3 3.7 4.2 4.0 3.5 4.1 3.9 3.1 3.4 3.5 3.7 4.3
4.6 3.8 2.7 2.8 2.9 2.5 2.2 2.5 .8 2.1 2.7 3.7 3.8 3.3 2.4 2.2 2.6 3.0 2.7 3.4 3.2 3.3 3.0 3.7 4.0 4.0 3.9 3.4 3.3 3.2 3.0 3.3 3.4 3.7 4.0 4.6
2.6 2.5 2.6 2.7 2.4 2.4 2.4 2.7 2.8 3.0 3.0 3.2 2.6 2.1 2.2 2.5 3.2 3.5 3.4 3.5 3.4 3.5 3.3 3.4 3.4 3.8 3.7 3.7 4.1 2.9 3.5 3.7 3.3 2.9 2.8 2.8
1.5 2.2 2.6 2.1 1.8 2.0 2.5 2.1 2.1 2.4 2.8 2.7 2.8 2.3 2.1 2.5 2.7 2.8 3.2 3.4 3.1 3.2 2.5 2.4 2.7 3.0 3.3 3.2 2.2 2.0 2.0 1.3 1.3 1.6 1.1 1.6
1.4 1.9 2.0 2.1 2.2 2.5 2.8 2.5 2.3 2.5 2.6 2.3 2.7 2.8 2.8 2.7 2.4 2.8 2.8 2.2 2.0 2.8 2.7 2.4 2.4 2.7 2.5 2.4 2.4 2.2 1.5 1.5 2.0 .7 1.3 1.5
2.1 2.0 2.4 2.9 2.8 3.1 3.3 3.0 3.0 2.9 2.7 2.7 2.7 3.2 3.2 3.1 2.7 3.2 3.1 2.8 2.9 2.9 3.2 3.0 3.4 3.2 3.2 3.0 2.4 2.2 2.6 2.5 2.6 2.0 2.4 1.9
3.8 3.3 3.7 4.2 4.1 4.0 4.3 4.0 4.2 3.8 3.3 3.1 3.1 3.3 3.7 3.7 3.6 3.4 3.1 3.0 3.5 3.8 4.1 3.9 4.0 4.1 4.1 4.0 3.4 3.4 3.1 3.0 3.2 2.8 3.2 3.4
4.7 4.5 4.7 5.2 5.2 5.1 5.0 5.2 5.5 5.1 4.3 3.5 3.4 4.0 4.5 4.4 3.5 3.7 3.7 3.3 3.6 4.4 4.5 4.3 4.6 4.4 4.4 4.3 4.1 4.0 3.7 3.2 3.0 3.3 3.1 3.8
4.2 4.5 5.0 5.3 5.2 5.3 5.4 5.2 5.2 5.1 4.4 3.4 3.8 3.9 4.9 4.4 3.8 4.0 3.8 3.9 3.6 3.6 3.9 3.9 4.0 4.1 4.0 4.3 4.2 4.1 3.9 3.6 3.3 3.1 3.0 3.4
4.1 4.5 4.5 4.4 4.6 4.5 4.6 4.7 4.6 4.6 4.2 4.6 4.2 4.8 4.5 4.3 4.2 4.0 3.9 3.5 3.9 3.3 3.6 3.8 3.8 4.0 4.2 4.4 4.3 4.5 4.4 4.3 3.9 3.6 3.8 4.0
4.3 4.5 4.5 3.9 3.3 3.5 4.0 4.2 3.8 3.7 3.7 3.4 3.4 3.9 2.7 2.8 2.7 2.7 3.2 2.6 3.0 2.9 2.9 3.3 3.4 3.5 3.7 3.7 4.3 4.3 4.4 4.6 4.1 4.2 4.1 4.1
3.5 3.1 3.3 2.7 2.5 2.4 2.6 2.2 2.3 2.5 2.7 2.5 2.0 2.0 1.7 1.3 1.5 2.2 2.1 2.5 2.2 2.9 3.1 3.4 3.2 3.3 3.3 3.5 3.9 3.6 3.6 3.6 3.9 3.6 3.5 3.5
2.0 1.4 1.2 2.2 2.6 2.8 2.7

500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 850 TO 1000 HPA
DECEMBER 1996
FIGURE 28
NOAA–14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT


1.2 2.8 2.7 .8 1.3 .5 .8
.1 .8 .1 -.3 1.8 1.5 1.3 -.2 .8 3.2 3.3 2.3 1.5 1.7 1.0 1.8 2.4 2.6 1.6 2.0 1.1 .7 2.9 2.9 2.8 2.7 1.0 1.7 .5
.3 .0 -.6 -.7 .6 1.5 .7 .5 1.6 .8 .6 .8 -.7 -.4 .2 .6 .7 2.6 2.4 .1
.3 1.5 .1 .8 2.3 2.7 1.3 3.3 2.1 .9 -.1 .0 1.0 1.0 .7 .6 .8 -.2 .2 .5 .1 .1 -1.5 .6 -.5
.4 .5 .2 .2 .3 -.1 .7 1.1 1.9 1.8 .7 -.2 -.2 .4 .1 .7 .4 -.8 .6 1.0 2.1 .6 .0 .4 .9
-.3 -.7 -.4 .3 .4 .5 1.8 1.6 .3 .7 .2 .4 .4 .1 .0 .2 .7 -.2 .5 .3 .7 2. -.2 -1.0 -.7 -.2
.4 .1 .7 .4 .6 .7 .8 .8 .4 .7 .4 -.3 -.3 .2 .4 .7 1.4 3.0 1.6 .4 -.5 1.1 .4 .5 .9 .9 .4 -.2 -.1 .2
-.3 -.1 -.2 -.1 .5 .4 .0 .1 .1 .3 -.3 -.1 -.2 .0 .8 .8 -.1 -.9 -.9 .5 .2 .5 .8 1.5 .9 .8 -.1 .2 -.2 -.6 -.4 -.4 -.1
-.4 .0 -.1 .1 .1 -.2 -.2 -.2 -.5 -.8 -1.4 -.5 -2.2 -.1 .0 .2 -.1 -1.0 -.9 .9 .8 .5 .8 .4 .1 -.1 -.1 .4 .3 .4 .4 .0 .0
.0 .2 .1 .2 .2 .3 .3 .3 .2 -.4 -1.3 -2.6 -2.8 -.8 .4 -.3 .0 .2 -.7 -.9 .6 .7 .7 .4 .6 .4 -.6 .3 .9 .7 .3
.2 .1 .2 .2 .1 .0 .3 .7 .7 .4 2.3 -2.0 -2.9 .3 1.1 1.4 1.2 -.1 .6 .5 .2 .3 .1 .3 .4 -.2 .6 -.4 .4 .4 -.1 -.1
.2 .9 .7 .8 .0 -.2 -.6 -.1 .2 .8 1.2 -4.3 -2.1 .9 -.4 .1 .5 .8 .5 .4 .2 .0 .6 .4 .8 1.1 1.6 1.2 .3 -.4 -.6 .6 -.1 -.2
.4 .9 1.3 .8 .1 -.4 -.5 .4 .6 .1 .8 -.7 .2 -.8 -.6 -.7 .0 .3 .3 .9 .5 .0 .2 .7 .5 .2 .7 1.6 1.8 1.5 1.3 .8 2.6 .7 .0 .4
.3 .8 .9 .5 .6 .4 -.1 .4 .5 .8 1.7 .7 -.1 .6 .1 .3 .1 .5 .9 1.0 1.6 1.1 .7 1.3 1.1 .9 1.1 .8 1.0 1.0 .6 .9 1.2 .3 .4 .0
.4 .8 .9 1.0 .5 .3 .4 .7 .4 .0 .4 .2 .3 .1 .4 .4 -.2 .1 .1 .5 1.0 1.5 1.5 1.1 1.4 .6 .7 1.2 1.0 1.3 1.4 1.1 1.1 .8 .7 .4
1.7 .6 2.1 1.3 .0 .3 .2 .4 .0 -.2 .8 1.5 1.7 2.7 1.4 1.2 .3 .9 .5 .6 1.2 1.3 1.6 .7 .1 .8 .2 .8 1.3 .4 1.2 1.7 2.3 1.8 1.4
2.1 2.3 1.9 .1 .8 .3 1.0 1.1 1.4 1.3 3.0 2.5 1.6 .4 .7 1.8

500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 100 TO 300 HPA
DECEMBER 1996
NOAA–14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 29


-.7 -.1 -.4 .0 -.1 -.5 -.8 -.5 -.3 -.1 .2
-.2 .0 -.1 .0 -.3 -.4 -.2 .0 .7 .8 .4 .2 -.1 -.6 -.9 -1.0 -1.0 -.5 -.2 .0 .0 .1 -.1 -.1 -.2 -.2 -.1
-.4 .0 -.2 -.4 -.6 -.7 .1 .6 .6 .0 1.0 -.6 -.5 -.1 -.2 -.5 -.4 -.5 -.9 -.7 -.7 -.9 -.6 -.4 -.2
-.5 -.6 -1.1 -.6 -.2 -.2 -.5 -.4 .1 .1 -.1 .0 .1 .2 .1 -.2 -.1 .0 .0 .0 -.2 .0 -1.0 -1.6 -1.0 -.3 -.4
-.3 -.4 -.8 -.4 -.5 .4 -.1 -.2 .0 .4 .2 .1 -.4 -.5 .2 .2 -.2 -.1 .3 .1 -.6 -.5 -.3 -.7 -.1
-.7 -.8 -.6 -.6 -.3 .1 .7 .8 .7 .7 .5 .3 .1 .1 .1 -.3 -.5 .0 -.1 .3 .4 .0 -.3 -1.2 -1.2 -1.0 -.8 -.6 -.9 -.7 -.5 -.5
-.3 -.4 -.6 -.6 -.4 .1 .4 .7 .5 .6 .2 -.3 .0 .2 .3 .4 .1 -.1 -.1 .2 -.2 -.4 -.2 .1 .0 .2 -.3 -.1 -.1 -.4
.3 .5 .4 .3 .6 .8 .8 .6 .6 .4 .3 .1 .3 .4 .4 .3 .6 .4 .4 .2 .3 .3 .5 .5 .5 .5 .3 .4 .5 .6
.6 .8 1.1 1.1 1.1 1.1 .9 .9 .9 .9 .8 .5 .3 .3 .3 .4 .6 .7 .7 .5 .4 .4 .2 .5 .3 .4 .3 .3 .4 .5
.5 .8 1.0 1.0 1.1 1.0 .8 .8 1.1 1.4 .7 .3 .5 .4 .6 .9 1.1 .6 .3 .4 .6 .4 .2 .0 .2 .3 .5 .2 .4
.5 .6 .7 .5 .5 .5 .2 .1 .6 .9 .5 .4 .2 .1 .2 .5 .9 .7 .5 .4 .2 .2 .2 .5 .7 .5 .3 .3 .2
.1 .2 .3 .3 .2 .2 -.3 -.4 -.4 -.2 .1 .3 .1 -.2 -.3 -.3 -.2 .1 .2 .5 .3 -.2 .1 .0 .1 .3 .1 .0 .2 -.2 -.2 -.2 -.1 .0
-.1 .2 .1 .0 -.1 .4 .1 .1 -.2 -.3 -.2 .0 -.2 -.3 -.3 -.3 .0 .2 .3 .2 .0 .0 .0 .2 .1 .1 .0 -.1 .0 .1 .1 -.1 .3
.1 -.1 -.3 -.1 .0 .0 .4 .6 .4 .3 .3 .5 .4 .0 .2 .4 .3 .3 .4 .3 .6 .6 .7 .7 .4 .4 .5 .3 .1 .1 .3 .5 .4 .2 -.1
-.1 -.4 .0 -.6 -.6 -.3 -.1 .1 -.3 -.4 .0 .1 -.4 .3 -.3 -.3 -.1 .0 .0 -.1 .1 -.2 .7 .0 -.1 -.2 -.2 -.1 .0 -.1 -.2 -.1 -.1 .0 -.1
-.1 -.2 -.4 -.2 -.3 .0 -.4 -.5 -.3 -.4 -.5 -.4 -.2 -.3 -.3 -.4 -.3 -.6 .0 -.1 .0 -.4 -.4 -.2 -.2 .3 .0 .2 .1 -.2 -.4 -.5 -.3 -.3
-.5 -.7 -1.1 -.9 -.5 .1 .2 .7 .0 .0 .3 -.1 .0 .1 .4 .3 .1 .5 .0 -.2 .1 .1 .4 .5 .6 .8 .1 -.2 -.4 -.7 -.7 -.7 -1.0 -1.0
-1.5 -1.1 -.9 -.8 -.3 -.3 -1.2 -.5

500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 30 TO 50 HPA
DECEMBER 1996
NOAA–14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 30

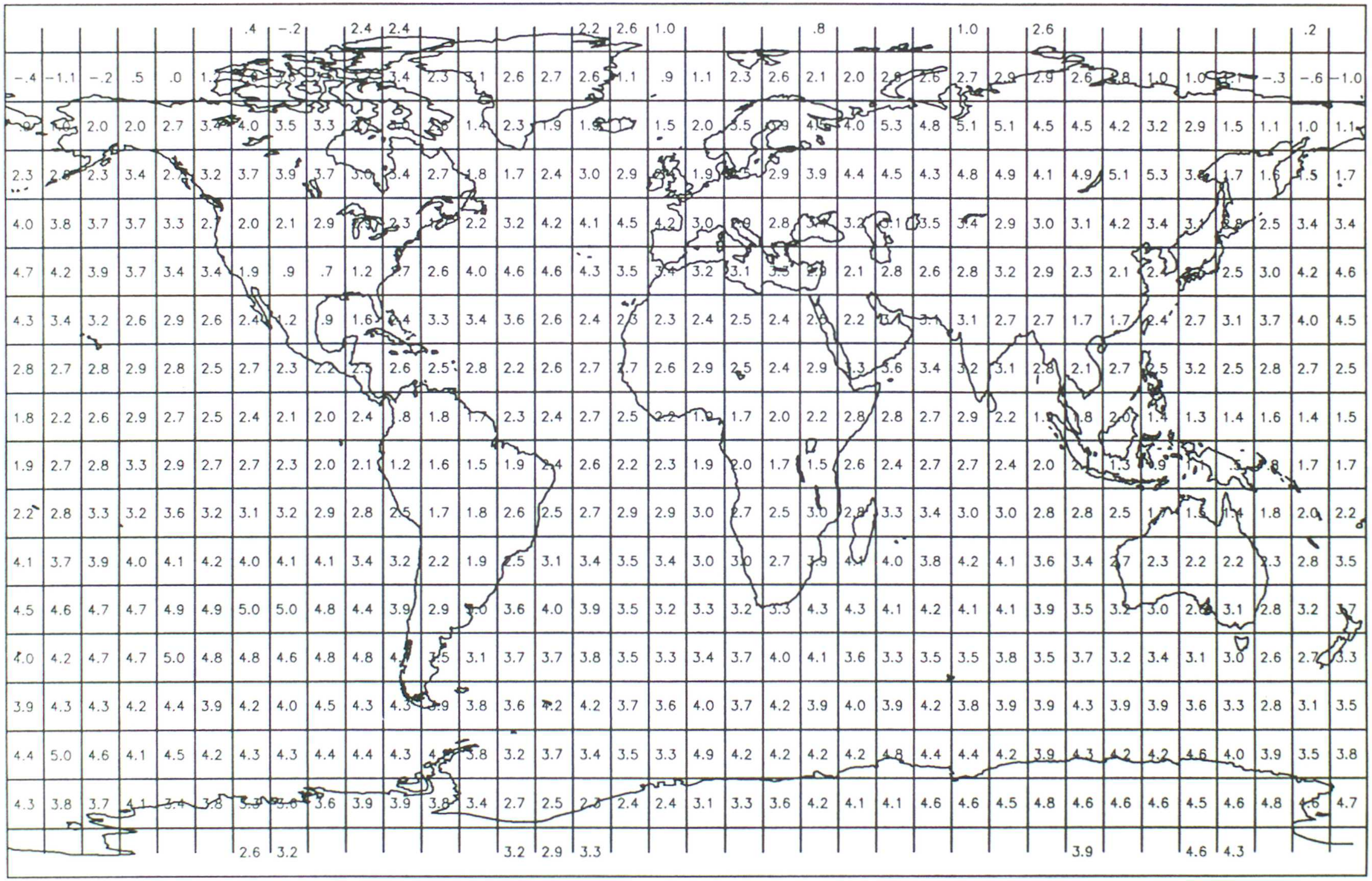

.4 −.2 2.4 2.4 2.2 2.6 1.0 .8 1.0 2.6 .2
−.4 −1.1 −.2 .5 .0 1. 3.4 2.3 3.1 2.6 2.7 2.6 1.1 .9 1.1 2.3 2.6 2.1 2.0 2.8 2.6 2.7 2.9 2.9 2.6 2.8 1.0 1.0 −.3 −.6 −1.0
1.0 2.0 2.0 2.7 3.4 4.0 3.5 3.3 1.4 2.3 1.9 1.9 1.5 2.0 3.5 4.0 5.3 4.8 5.1 5.1 4.5 4.5 4.2 3.2 2.9 1.5 1.1 1.0 1.1
2.3 2.8 2.3 3.4 2. 3.2 3.7 3.9 3.7 3.0 3.4 2.7 1.8 1.7 2.4 3.0 2.9 1.9 2.9 3.9 4.4 4.5 4.3 4.8 4.9 4.1 4.9 5.1 5.3 3.8 1.7 1.6 1.5 1.7
4.0 3.8 3.7 3.7 3.3 2. 2.0 2.1 2.9 2.3 2.2 3.2 4.2 4.1 4.5 4.2 3.0 2.9 2.8 3.4 3.2 3.1 3.5 3.4 2.9 3.0 3.1 4.2 3.4 3.1 3.8 2.5 3.4 3.4
4.7 4.2 3.9 3.7 3.4 3.4 1.9 .9 .7 1.2 .7 2.6 4.0 4.6 4.6 4.3 3.5 3.4 3.2 3.1 2.9 2.1 2.8 2.6 2.8 3.2 2.9 2.3 2.1 2.4 2.5 3.0 4.2 4.6
4.3 3.4 3.2 2.6 2.9 2.6 2.4 1.2 .9 1.6 2.4 3.3 3.4 3.6 2.6 2.4 2.3 2.3 2.4 2.5 2.4 2.6 2.2 3.1 3.1 3.1 2.7 2.7 1.7 1.7 2.4 2.7 3.1 3.7 4.0 4.5
2.8 2.7 2.8 2.9 2.8 2.5 2.7 2.3 2.2 2.3 2.6 2.5 2.8 2.2 2.6 2.7 2.7 2.6 2.9 2.5 2.4 2.9 3.3 3.6 3.4 3.2 3.1 2.8 2.1 2.7 2.5 3.2 2.5 2.8 2.7 2.5
1.8 2.2 2.6 2.9 2.7 2.5 2.4 2.1 2.0 2.4 .8 1.8 1.7 2.3 2.4 2.7 2.5 2.2 1.9 1.7 2.0 2.2 2.8 2.8 2.7 2.9 2.2 1.8 1.8 2.0 1.4 1.3 1.4 1.6 1.4 1.5
1.9 2.7 2.8 3.3 2.9 2.7 2.7 2.3 2.0 2.1 1.2 1.6 1.5 1.9 2.4 2.6 2.2 2.3 1.9 2.0 1.7 1.5 2.6 2.4 2.7 2.7 2.4 2.0 1.3 1.9 .8 1.7 1.7
2.2 2.8 3.3 3.2 3.6 3.2 3.1 3.2 2.9 2.8 2.5 1.7 1.8 2.6 2.5 2.7 2.9 2.9 3.0 2.7 2.5 3.0 2.8 3.3 3.4 3.0 3.0 2.8 2.8 2.5 1.7 1.5 1.4 1.8 2.0 2.2
4.1 3.7 3.9 4.0 4.1 4.2 4.0 4.1 4.1 3.4 3.2 2.2 1.9 2.5 3.1 3.4 3.5 3.4 3.0 3.0 2.7 3.9 4.1 4.0 3.8 4.2 4.1 3.6 3.4 3.7 2.3 2.2 2.2 2.3 2.8 3.5
4.5 4.6 4.7 4.7 4.9 4.9 5.0 5.0 4.8 4.4 3.9 2.9 3.0 3.6 4.0 3.9 3.5 3.2 3.3 3.2 3.3 4.3 4.3 4.1 4.2 4.1 4.1 3.9 3.5 3.2 3.0 2.8 3.1 2.8 3.2 3.7
4.0 4.2 4.7 4.7 5.0 4.8 4.8 4.6 4.8 4.8 4.7 3.5 3.1 3.7 3.7 3.8 3.5 3.3 3.4 3.7 4.0 4.1 3.6 3.3 3.5 3.5 3.8 3.5 3.7 3.2 3.4 3.1 3.0 2.6 2.7 3.3
3.9 4.3 4.3 4.2 4.4 3.9 4.2 4.0 4.5 4.3 4.3 3.9 3.8 3.6 4.2 4.2 3.7 3.6 4.0 3.7 4.2 3.9 4.0 3.9 4.2 3.8 3.9 3.9 4.3 3.9 3.9 3.6 3.3 2.8 3.1 3.5
4.4 5.0 4.6 4.1 4.5 4.2 4.3 4.3 4.4 4.4 4.3 4. 3.8 3.2 3.7 3.4 3.5 3.3 4.9 4.2 4.2 4.2 4.2 4.8 4.4 4.4 4.2 3.9 4.3 4.2 4.2 4.6 4.0 3.9 3.5 3.8
4.3 3.8 3.7 4.1 3.4 3.8 3.9 3.6 3.6 3.9 3.9 3.8 3.4 2.7 2.5 2.3 2.4 2.4 3.1 3.3 3.6 4.2 4.1 4.1 4.6 4.6 4.5 4.8 4.6 4.6 4.6 4.5 4.6 4.8 4.6 4.7
2.6 3.2 3.2 2.9 3.3 3.9 4.6 4.3

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: December, 1996

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoy.

Area monitored :10°N - 80°N, 85°W - 0°W

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :All hours combined.

Elements monitored :Mean sea-level pressure (hPa)
:Wind speed ($m\ s^{-1}$)
:Wind direction (degrees)

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. A positive bias indicates the observation is veered to the background

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors

GROSS ERROR LIMITS :15 hPa (pressure)
:25 $m\ s^{-1}$ (Vector Wind)

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
13903	24.4	-34.3	ALL	MSLP	SUR	234	0	0	0.8	0.1	0.9
13905	23.8	-41.0	ALL	MSLP	SUR	235	0	0	0.9	-0.2	0.9
13906	12.8	-41.1	ALL	MSLP	SUR	214	0	0	1.0	0.1	1.0
13910	21.6	-40.9	ALL	MSLP	SUR	237	0	0	0.8	-0.1	0.8
13911	17.8	-54.8	ALL	MSLP	SUR	214	0	0	1.0	0.6	1.2
13912	22.5	-54.4	ALL	MSLP	SUR	223	0	0	0.9	0.7	1.1
13913	16.7	-39.6	ALL	MSLP	SUR	223	0	0	0.9	0.2	0.9
13915	16.0	-37.6	ALL	MSLP	SUR	209	0	0	0.9	-0.4	1.0
41529	41.7	-42.6	ALL	MSLP	SUR	220	0	0	1.4	-0.1	1.5
41530	37.4	-48.8	ALL	MSLP	SUR	229	0	0	1.3	0.1	1.3
41611	12.7	-46.7	ALL	MSLP	SUR	172	0	0	0.8	-0.5	0.9
41612	14.9	-52.1	ALL	MSLP	SUR	176	0	0	0.7	-0.1	0.7
41613	16.8	-50.4	ALL	MSLP	SUR	172	0	0	0.8	-0.2	0.9
41614	14.4	-53.4	ALL	MSLP	SUR	161	0	0	0.7	0.0	0.7
41922	24.1	-43.6	ALL	MSLP	SUR	211	0	0	0.9	0.6	1.1
41924	14.3	-49.6	ALL	MSLP	SUR	206	0	0	1.0	-0.1	1.0
42624	52.7	-42.6	ALL	MSLP	SUR	9	0	0	1.6	-1.4	2.2
44513	45.4	-48.1	ALL	MSLP	SUR	258	0	0	1.3	0.2	1.3
44614	61.4	-23.3	ALL	MSLP	SUR	1152	10	1	1.6	0.4	1.7
44616	62.5	-21.7	ALL	MSLP	SUR	1788	2	0	1.2	0.9	1.5
44617	46.2	-24.7	ALL	MSLP	SUR	305	76	25	6.2	-1.3	6.4
44726	51.3	-35.8	ALL	MSLP	SUR	593	4	1	1.5	0.0	1.5
44728	62.6	-17.9	ALL	MSLP	SUR	31	1	3	1.5	-0.5	1.5
44743	48.7	-34.4	ALL	MSLP	SUR	346	2	1	1.3	-0.2	1.3
44760	28.2	-65.9	ALL	MSLP	SUR	352	4	1	0.9	-0.2	0.9
44763	61.7	-17.3	ALL	MSLP	SUR	1917	9	0	1.4	0.2	1.4
44764	55.8	-39.1	ALL	MSLP	SUR	11	0	0	1.1	-1.0	1.5
44765	62.5	-21.6	ALL	MSLP	SUR	1718	4	0	1.8	-0.6	1.8
44766	52.4	-18.0	ALL	MSLP	SUR	631	0	0	1.2	-0.6	1.4
44767	60.8	-17.5	ALL	MSLP	SUR	1845	4	0	1.3	0.1	1.3
44770	24.4	-57.7	ALL	MSLP	SUR	592	0	0	1.3	0.1	1.3
44772	57.6	-14.2	ALL	MSLP	SUR	1762	0	0	1.0	-0.3	1.0
44776	51.8	-38.8	ALL	MSLP	SUR	603	3	0	1.6	-0.1	1.6
44777	54.6	-27.5	ALL	MSLP	SUR	777	7	1	1.5	-0.2	1.5
44778	55.2	-22.5	ALL	MSLP	SUR	771	5	1	1.3	-0.4	1.4
44780	51.5	-33.6	ALL	MSLP	SUR	363	0	0	1.4	-0.5	1.5
44849	58.5	-55.9	ALL	MSLP	SUR	265	0	0	2.2	0.2	2.3
44850	55.9	-47.2	ALL	MSLP	SUR	220	6	3	1.7	0.6	1.8
44910	57.1	-51.7	ALL	MSLP	SUR	255	0	0	1.6	-0.2	1.6
44911	52.5	-39.5	ALL	MSLP	SUR	105	0	0	2.1	-0.5	2.2
44918	57.9	-52.9	ALL	MSLP	SUR	251	0	0	1.5	-0.4	1.6
44919	57.0	-51.9	ALL	MSLP	SUR	215	9	4	1.6	0.3	1.6
44923	59.0	-53.9	ALL	MSLP	SUR	268	114	43	1.9	0.2	1.9
44924	57.0	-51.1	ALL	MSLP	SUR	266	0	0	1.5	0.2	1.5
46764	56.5	-46.9	ALL	MSLP	SUR	186	1	1	3.3	1.1	3.5
47541	67.8	-63.1	ALL	MSLP	SUR	198	0	0	1.9	0.0	1.9
53546	44.7	-63.6	ALL	MSLP	SUR	62	0	0	1.7	-3.7	4.1
56503	44.7	-63.6	ALL	MSLP	SUR	45	0	0	1.8	-3.5	4.0
56513	44.7	-63.6	ALL	MSLP	SUR	15	15	100	0.0	0.0	0.0
56516	44.7	-63.6	ALL	MSLP	SUR	52	52	100	0.0	0.0	0.0
62503	37.4	-14.3	ALL	MSLP	SUR	562	0	0	1.2	-0.9	1.5
62504	34.8	-9.9	ALL	MSLP	SUR	535	0	0	1.1	-0.9	1.4
62507	35.9	-23.0	ALL	MSLP	SUR	525	1	0	2.7	0.7	2.8
62508	50.1	-17.8	ALL	MSLP	SUR	674	0	0	1.2	0.3	1.2
62510	38.9	-16.1	ALL	MSLP	SUR	595	0	0	1.4	-0.5	1.5
62513	44.2	-18.9	ALL	MSLP	SUR	462	0	0	1.3	0.1	1.3
62515	46.7	-17.3	ALL	MSLP	SUR	637	0	0	1.1	-0.3	1.2
62517	48.3	-16.1	ALL	MSLP	SUR	621	0	0	1.1	-0.1	1.1
62518	44.1	-20.3	ALL	MSLP	SUR	137	0	0	2.6	-0.6	2.6
62551	46.4	-8.4	ALL	MSLP	SUR	358	0	0	1.1	-0.2	1.1

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
64513	56.4	-12.7	ALL	MSLP	SUR	3	0	0	1.1	0.6	1.2
64514	58.6	-5.1	ALL	MSLP	SUR	209	0	0	1.1	0.2	1.1
64561	61.7	-29.5	ALL	MSLP	SUR	828	7	1	1.7	-0.2	1.8
65562	51.9	-17.4	ALL	MSLP	SUR	278	0	0	1.1	-0.6	1.2
65594	57.9	-25.6	ALL	MSLP	SUR	1790	10	1	1.7	-0.1	1.7
65595	58.7	-22.0	ALL	MSLP	SUR	1702	2	0	1.4	-0.3	1.4
65596	58.1	-40.8	ALL	MSLP	SUR	205	0	0	1.7	-0.5	1.8
65598	60.5	-29.5	ALL	MSLP	SUR	1603	8	0	1.8	-0.6	1.9
65599	49.7	-47.6	ALL	MSLP	SUR	1184	3	0	1.4	0.0	1.4
WINS SPEED											
41529	41.7	-42.6	ALL	SPEED	SUR	213	0	0	2.2	-1.1	2.5
41530	37.4	-48.8	ALL	SPEED	SUR	228	0	0	2.7	-1.4	3.0
41611	12.7	-46.7	ALL	SPEED	SUR	171	0	0	1.5	0.7	1.6
41612	14.9	-52.1	ALL	SPEED	SUR	173	0	0	2.2	0.0	2.2
41613	16.8	-50.4	ALL	SPEED	SUR	164	0	0	2.2	-1.2	2.5
41614	14.4	-53.4	ALL	SPEED	SUR	159	0	0	1.6	0.0	1.6
42624	52.7	-42.6	ALL	SPEED	SUR	9	0	0	0.9	-2.1	2.3
44513	45.4	-48.1	ALL	SPEED	SUR	191	0	0	2.8	-6.7	7.2
44726	51.3	-35.8	ALL	SPEED	SUR	574	4	1	3.3	-2.0	3.8
44776	51.8	-38.8	ALL	SPEED	SUR	425	1	0	6.1	-7.2	9.5
62518	44.1	-20.3	ALL	SPEED	SUR	273	0	0	3.0	-0.5	3.1
62551	46.4	-8.4	ALL	SPEED	SUR	195	0	0	2.3	0.1	2.3
64516	72.7	-4.0	ALL	SPEED	SUR	53	0	0	1.8	-1.8	2.5
WIND DIRECTION											
41529	41.7	-42.6	ALL	DIRN.	SUR	201	0	0	16.9	-3.5	17.2
41530	37.4	-48.8	ALL	DIRN.	SUR	204	0	0	23.5	5.5	24.2
41611	12.7	-46.7	ALL	DIRN.	SUR	167	0	0	14.3	2.8	14.6
41612	14.9	-52.1	ALL	DIRN.	SUR	139	0	0	27.9	4.8	28.3
41613	16.8	-50.4	ALL	DIRN.	SUR	130	0	0	14.1	8.1	16.2
41614	14.4	-53.4	ALL	DIRN.	SUR	117	0	0	17.4	9.1	19.6
42624	52.7	-42.6	ALL	DIRN.	SUR	9	0	0	8.1	23.3	24.6
44513	45.4	-48.1	ALL	DIRN.	SUR	172	0	0	34.6	15.5	37.9
44726	51.3	-35.8	ALL	DIRN.	SUR	519	4	1	17.9	0.1	17.9
44776	51.8	-38.8	ALL	DIRN.	SUR	392	1	0	48.2	27.5	55.5
62518	44.1	-20.3	ALL	DIRN.	SUR	246	0	0	38.2	-7.0	38.8
62551	46.4	-8.4	ALL	DIRN.	SUR	182	0	0	21.5	0.2	21.5
64516	72.7	-4.0	ALL	DIRN.	SUR	53	0	0	24.4	-120.2	122.7

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: December, 1996

Monitoring procedures:

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from Bracknell global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in $m\ s^{-1}$

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 $m\ s^{-1}$ Vector Wind

SELECTION CRITERIA :N REP ≥ 20

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	3039	0	1	1.8	0.0	3052	0	2	0	8.6	0.9
AAN	23	0	0	1.8	0.4	22	0	0	0	10.4	2.2
ACA	1273	1	2	2.1	0.0	1323	0	2	0	7.4	0.6
AEA	393	2	100	2.7	1.2	387	1	7	0	10.9	1.2
AEL	505	1	4	2.0	-0.3	512	0	5	0	8.4	0.7
AFL	142	1	25	2.2	0.5	142	0	6	0	11.6	1.3
AFR	951	0	5	1.8	-0.1	971	0	6	0	8.1	0.8
AIC	28	0	4	2.2	-0.3	27	0	4	0	7.8	1.0
AIH	105	0	2	1.8	0.2	111	0	5	0	10.1	0.5
AJM	48	0	0	1.8	-0.8	54	0	2	0	8.3	0.9
AMX	167	4	5	1.8	-0.3	172	1	5	0	10.7	0.7
ANZ	246	0	1	1.8	-0.8	251	0	2	0	7.4	0.7
AOM	276	1	1	1.8	0.8	287	0	2	0	8.4	0.9
AUA	56	2	0	1.8	-0.5	57	0	0	0	7.6	0.6
AVA	111	2	5	2.0	-0.3	116	0	6	0	8.3	0.0
AZA	485	1	6	2.5	0.8	488	0	6	0	8.8	0.7
BAL	241	2	17	1.8	-0.2	247	0	17	0	9.2	1.0
BAW	1255	1	2	1.8	-0.1	1275	0	4	0	8.6	0.7
BWA	101	1	100	2.9	1.7	103	1	12	1	11.3	0.9
CDN	418	0	1	1.6	0.0	418	0	3	0	7.8	1.1
CFC	39	0	13	2.6	0.8	40	3	18	0	9.0	1.8
CFG	686	0	2	1.9	-0.9	695	0	3	0	9.4	0.4
CKS	33	0	30	2.4	0.9	34	0	0	0	8.2	1.1
CKT	52	0	2	1.4	0.4	58	0	7	0	9.7	1.6
CLX	283	1	2	1.7	-0.8	290	0	3	0	8.3	-0.1
CMM	25	0	4	2.4	-0.3	25	0	4	0	9.3	0.0
COA	622	1	4	2.1	0.9	628	0	4	0	9.4	0.7
CRL	212	1	4	2.2	0.4	218	0	5	0	9.2	0.7
CSA	26	0	0	1.4	-0.3	26	0	0	0	6.1	2.1
CTM	30	0	20	2.0	-0.9	30	0	23	0	7.7	0.6
CUB	212	0	100	2.2	1.1	216	0	13	0	10.0	0.9
DAF	24	0	0	2.3	-1.6	24	0	8	0	12.8	0.4
DAL	2343	0	2	1.9	0.3	2378	0	3	0	8.9	0.6
DHL	341	10	100	4.9	-2.9	346	0	100	0	13.8	1.5
DLH	2536	1	8	1.8	0.2	2546	0	9	1	7.8	0.7
DOA	44	5	5	1.5	-0.2	44	0	5	0	11.1	0.7
ELY	164	1	10	2.2	0.1	171	0	9	0	10.6	-0.3
EWW	170	8	100	2.7	0.8	174	1	100	0	18.7	4.6
FDX	580	0	1	1.6	0.6	587	0	1	0	7.8	0.8
FIN	359	0	3	1.8	0.4	358	0	3	1	7.6	0.9
GAF	48	2	4	2.8	0.7	47	0	6	4	9.4	0.9
GCO	29	0	0	1.5	0.9	30	0	7	0	12.0	3.8
HLF	120	2	3	2.0	-0.8	122	0	6	1	11.4	0.8
IBE	1185	1	23	2.2	0.3	1192	0	25	0	10.1	1.2
ICE	616	0	1	1.7	0.0	613	0	2	1	7.8	1.0
KLM	1961	0	1	1.8	0.2	1981	0	2	0	8.1	0.8
LDA	168	0	10	2.2	-1.1	168	0	9	0	7.2	-0.1
LDI	149	0	19	2.2	-1.4	154	0	19	0	7.3	-0.1
LIB	116	1	3	1.9	0.8	121	0	4	0	8.7	1.6
LOT	262	0	1	1.8	-1.0	260	0	2	0	7.3	-0.1
LTU	663	0	3	1.8	-0.1	652	0	4	0	8.4	0.5
MPH	621	0	2	1.8	-0.5	629	0	3	0	8.3	0.6
NWA	2148	1	2	2.1	0.9	2197	0	3	0	8.6	0.7
PIA	26	0	8	3.0	-0.1	27	0	7	0	9.0	0.1
RAM	27	0	7	2.8	-1.1	27	0	0	0	9.2	0.7
RCH	237	1	100	2.9	0.0	250	1	100	0	13.9	2.6
RJA	87	1	2	1.8	0.6	88	0	2	0	7.2	0.2
RRR	24	4	17	2.4	-0.1	24	0	13	0	11.2	2.7
SAB	65	0	5	1.3	0.2	68	0	9	0	11.9	-0.6

	TEMPERATURE				WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
SAS	868	0	1	2.2	0.7	868	0	2	0	7.9	0.1
SIA	92	1	8	2.3	-1.1	92	0	12	0	9.8	1.2
SLR	22	0	23	1.7	0.0	22	0	23	0	11.4	1.0
SPP	83	0	14	2.2	0.0	76	0	16	0	9.1	0.9
SVA	118	1	5	2.0	0.6	122	0	100	0	13.7	1.9
SWR	167	2	3	1.8	0.5	170	0	3	0	8.0	1.0
TAP	250	0	6	1.8	0.2	249	0	8	0	9.9	1.3
TEJ	68	6	15	1.9	0.4	74	0	20	0	9.4	1.2
TOW	90	0	10	1.7	-0.3	91	0	13	0	11.0	0.0
TWA	1108	0	1	2.0	0.2	1108	0	3	0	9.2	1.0
TWE	36	0	6	3.1	1.2	37	0	3	0	6.8	1.2
UAL	1989	0	2	2.1	-1.0	2010	0	3	0	8.2	0.7
ULE	198	1	2	1.8	0.4	199	0	3	0	8.5	1.0
UPS	521	0	17	1.6	0.0	553	0	19	0	8.1	0.8
USA	240	2	4	1.9	-0.2	233	0	5	0	9.2	0.8
VIA	134	1	9	2.6	0.5	139	0	8	0	10.2	1.6
VIR	257	0	3	1.8	-0.4	266	0	3	0	8.1	0.9
WOA	38	0	21	3.0	2.2	38	0	16	0	6.0	0.4
BA	6138	0	12	1.3	0.3	6137	0	12	0	6.9	1.1
KL	3561	0	10	1.3	0.3	3560	0	14	0	7.0	1.3
LH	353	0	7	1.5	0.3	352	0	8	1	6.3	0.9
SV	247	0	10	1.3	0.6	247	0	41	0	8.0	1.5
N	185	4	3	2.4	0.2	186	0	2	0	9.6	0.7

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: December, 1996

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	100	1	0	0.0	10.0	10.0
DBBH	12	Z	100	6	0	21.4	21.5	-1.3
DBLK	00	Z	100	1	0	0.0	5.0	5.0
FNOR	00	Z	100	12	0	10.8	24.1	21.6
FNOR	12	Z	100	14	0	26.2	27.2	7.2
FNOU	00	Z	100	12	0	19.5	22.5	11.3
FNOU	12	Z	100	14	0	17.5	17.7	2.6
FNPH	00	Z	100	8	0	10.8	15.0	10.4
FNPH	12	Z	100	6	0	13.5	14.7	5.8
FNRH	00	Z	100	1	0	0.0	1.0	-1.0
FNRS	00	Z	100	14	0	15.9	16.3	3.5
FNRS	12	Z	100	11	0	13.7	14.7	-5.4
JCCX	00	Z	100	1	0	0.0	26.0	26.0
JDWX	00	Z	100	1	0	0.0	18.0	18.0
JIVB	00	Z	100	1	0	0.0	22.0	22.0
KCEJ	00	Z	100	1	0	0.0	20.0	20.0
LDWR	00	Z	100	31	0	19.8	20.0	-3.1
LDWR	12	Z	100	30	0	18.4	19.8	7.3
OXVH2	00	Z	100	8	0	24.0	25.2	7.6
OXVH2	12	Z	100	6	0	20.3	20.3	-0.5
OXYH2	00	Z	100	17	0	19.1	19.2	-2.0
OXYH2	12	Z	100	18	0	17.0	17.0	-0.6
SHIPS	00	Z	100	7	0	25.4	25.8	4.7
SHIPS	12	Z	100	5	0	8.9	34.8	33.6
V2EZ	00	Z	100	8	0	56.1	57.2	-11.1
V2EZ	12	Z	100	12	0	17.9	21.5	12.0
V2GH	00	Z	100	6	0	23.6	27.8	-14.7
V2GH	12	Z	100	7	0	12.4	12.8	-3.1
V2LV	00	Z	100	26	0	20.0	22.4	10.1
V2LV	12	Z	100	28	0	20.6	29.0	20.4
WTEU	00	Z	100	1	0	0.0	21.0	21.0
03953	00	Z	100	29	0	16.6	19.0	9.2
03953	12	Z	100	30	0	10.1	16.9	13.5
04018	00	Z	100	30	0	28.4	39.0	26.7
04018	12	Z	100	31	0	17.6	33.4	28.3
04220	00	Z	100	30	0	14.4	23.5	18.6
04220	12	Z	100	29	0	14.2	22.5	17.4
04270	00	Z	100	28	0	19.9	20.7	5.9
04270	12	Z	100	28	0	20.7	25.5	14.9
04339	00	Z	100	31	0	13.5	17.5	11.1
04339	12	Z	100	29	0	10.9	18.6	15.1
04360	00	Z	100	31	0	16.3	19.4	10.5
04360	12	Z	100	30	0	19.2	23.2	13.0
08001	00	Z	100	28	0	19.9	19.9	0.4
08001	12	Z	100	29	0	25.9	26.6	-6.2
08508	00	Z	100	27	0	22.1	22.5	4.3
08508	12	Z	100	28	0	21.6	25.1	12.8
08522	00	Z	100	1	0	0.0	26.0	26.0
60020	00	Z	100	29	0	16.9	19.3	9.3
60020	12	Z	100	29	0	12.0	14.7	8.4
71600	00	Z	100	30	0	16.8	29.6	24.3
71600	12	Z	100	31	0	17.1	23.8	16.5
72201	00	Z	100	26	0	28.2	44.0	33.8
72201	12	Z	100	24	1	17.4	45.4	42.0
72402	00	Z	100	27	0	18.8	26.4	18.6
72402	12	Z	100	26	1	23.7	26.4	11.7
74494	00	Z	100	19	0	24.4	27.3	12.3
74494	12	Z	100	22	0	23.3	23.3	0.7
78016	00	Z	100	1	0	0.0	6.0	6.0
78016	12	Z	100	29	0	15.3	15.4	1.1

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: December, 1996

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	500	1	0	0.0	28.0	28.0
DBBH	12	Z	500	6	0	26.3	28.3	10.5
DBLK	00	Z	500	1	0	0.0	38.0	-38.0
FNOR	00	Z	500	14	0	11.4	18.0	14.0
FNOR	12	Z	500	14	0	8.4	13.2	10.1
FNOU	00	Z	500	14	0	18.5	21.7	11.4
FNOU	12	Z	500	17	0	11.1	18.8	15.2
FNPH	00	Z	500	10	0	10.4	10.7	2.6
FNPH	12	Z	500	7	0	10.2	11.4	5.1
FNRH	00	Z	500	1	0	0.0	12.0	12.0
FNRS	00	Z	500	14	0	16.1	17.5	6.8
FNRS	12	Z	500	13	0	10.7	13.7	8.5
JCCX	00	Z	500	1	0	0.0	4.0	-4.0
JDWX	00	Z	500	1	0	0.0	8.0	8.0
JGQH	00	Z	500	1	0	0.0	1.0	-1.0
JIVB	00	Z	500	1	0	0.0	3.0	3.0
KCEJ	00	Z	500	1	0	0.0	3.0	-3.0
LDWR	00	Z	500	30	0	14.2	19.4	13.3
LDWR	12	Z	500	30	0	11.0	16.0	11.6
OXVH2	00	Z	500	9	0	26.4	28.5	10.7
OXVH2	12	Z	500	6	0	12.7	16.6	10.7
OXYH2	00	Z	500	18	0	11.9	12.2	2.7
OXYH2	12	Z	500	18	0	19.9	19.9	-0.1
SHIPS	00	Z	500	7	0	23.3	27.6	14.9
SHIPS	12	Z	500	5	0	6.4	17.4	16.2
V0/V	00	Z	500	1	0	0.0	0.0	0.0
V2EZ	00	Z	500	8	0	54.1	55.1	-10.0
V2EZ	12	Z	500	12	0	21.3	22.0	5.5
V2GH	00	Z	500	12	0	15.1	15.2	-1.4
V2GH	12	Z	500	11	0	14.6	14.7	-1.7
V2LV	00	Z	500	29	0	9.2	16.6	13.8
V2LV	12	Z	500	29	0	14.6	22.3	16.8
WTEU	00	Z	500	1	0	0.0	17.0	17.0
03953	00	Z	500	30	0	11.4	22.9	19.9
03953	12	Z	500	31	0	10.6	17.0	13.3
04018	00	Z	500	29	1	13.6	29.7	26.3
04018	12	Z	500	31	0	10.6	26.2	24.0
04220	00	Z	500	31	0	11.2	13.7	7.9
04220	12	Z	500	30	0	10.6	12.6	6.9
04270	00	Z	500	30	0	15.9	21.4	14.3
04270	12	Z	500	30	0	17.6	21.1	11.6
04339	00	Z	500	31	0	13.3	15.5	8.0
04339	12	Z	500	29	0	14.4	17.5	9.9
04360	00	Z	500	29	0	16.4	19.6	10.7
04360	12	Z	500	30	0	15.1	18.3	10.3
08001	00	Z	500	29	0	16.8	20.1	10.9
08001	12	Z	500	29	0	15.3	15.3	1.3
08508	00	Z	500	29	0	11.8	18.9	14.7
08508	12	Z	500	29	0	15.3	19.0	11.2
08522	00	Z	500	1	0	0.0	12.0	12.0
60020	00	Z	500	29	0	13.2	24.3	20.3
60020	12	Z	500	29	0	14.7	27.1	22.8
71600	00	Z	500	30	0	14.1	21.2	15.9
71600	12	Z	500	31	0	9.0	17.6	15.1
72201	00	Z	500	27	0	7.8	16.8	14.9
72201	12	Z	500	27	1	8.6	13.7	10.6
72402	00	Z	500	28	0	11.1	14.6	9.5
72402	12	Z	500	30	0	14.8	15.7	5.2
74494	00	Z	500	30	0	24.2	25.1	6.6
74494	12	Z	500	30	0	15.0	16.7	7.3
78016	00	Z	500	1	0	0.0	10.0	10.0
78016	12	Z	500	28	0	11.6	12.3	3.9

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: December, 1996

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	100	1	0	0	0.0	3.1	3.9
DBBH	12	V	100	5	0	0	0.0	-2.5	0.5
DBLK	00	V	100	1	0	0	0.0	-3.0	0.3
FNOR	00	V	100	12	0	0	4.3	0.0	-1.2
FNOR	12	V	100	14	0	0	2.5	-1.0	-0.6
FNOU	00	V	100	12	0	0	2.0	-0.3	0.0
FNOU	12	V	100	14	0	0	2.9	-2.4	1.0
FNPH	00	V	100	7	0	0	3.7	0.1	-2.1
FNPH	12	V	100	6	0	16	3.7	-9.6	1.4
FNRH	00	V	100	1	0	0	3.7	4.3	-3.2
FNRS	00	V	100	13	0	0	3.7	1.2	0.9
FNRS	12	V	100	11	0	0	3.7	-0.7	0.4
JIVB	00	V	100	1	0	0	3.2	-1.7	2.5
KCEJ	00	V	100	1	0	0	3.2	-0.9	-0.5
LDWR	00	V	100	31	0	0	3.2	-0.8	0.0
LDWR	12	V	100	30	0	0	1.7	-0.6	0.0
OXVH2	00	V	100	8	0	0	2.2	-1.0	0.9
OXVH2	12	V	100	6	0	0	2.2	-2.7	2.6
OXYH2	00	V	100	16	0	0	2.2	0.2	-0.5
OXYH2	12	V	100	18	0	0	2.4	-0.4	-0.7
SHIPS	00	V	100	3	0	0	2.4	-8.8	5.6
SHIPS	12	V	100	1	0	0	2.4	-3.9	3.7
V2EZ	00	V	100	8	0	0	2.4	1.7	-0.2
V2EZ	12	V	100	11	0	0	2.4	-0.3	0.4
V2GH	00	V	100	6	0	0	2.2	4.4	-0.2
V2GH	12	V	100	7	0	0	2.2	0.5	-0.7
V2LV	00	V	100	26	0	0	2.2	0.9	-0.2
V2LV	12	V	100	27	0	0	5.2	0.1	-0.8
WTEU	00	V	100	1	0	0	3.8	1.6	-2.0
03953	00	V	100	29	0	0	2.9	-0.3	-0.6
03953	12	V	100	30	0	0	1.9	-0.9	0.4
04018	00	V	100	30	0	0	1.8	-0.1	-0.3
04018	12	V	100	31	0	0	3.4	-1.2	-0.8
04220	00	V	100	30	0	0	2.8	0.6	0.0
04220	12	V	100	29	0	0	2.4	0.9	0.1
04270	00	V	100	28	0	0	2.8	-0.3	1.2
04270	12	V	100	28	0	0	2.6	-1.7	1.1
04339	00	V	100	31	0	3	3.8	-0.4	-1.0
04339	12	V	100	30	0	0	2.7	-0.5	-0.7
04360	00	V	100	31	0	0	2.8	-0.9	-0.1
04360	12	V	100	29	0	3	3.6	-0.3	0.4
08001	00	V	100	27	0	0	2.7	0.6	0.0
08001	12	V	100	28	0	0	2.0	-1.3	0.3
08508	00	V	100	27	0	0	3.8	1.7	0.8
08508	12	V	100	28	0	0	3.6	0.0	1.5
08522	00	V	100	1	0	0	3.5	-0.1	-2.1
60020	00	V	100	29	0	0	4.6	0.5	-0.9
60020	12	V	100	28	0	0	3.7	-3.1	0.7
71600	00	V	100	30	0	0	3.3	-0.1	0.2
71600	12	V	100	31	0	0	3.6	-0.3	0.4
72201	00	V	100	26	0	7	2.8	-1.9	-1.1
72201	12	V	100	24	0	8	4.9	-2.6	-1.4
72402	00	V	100	24	0	0	7.6	-0.1	1.1
72402	12	V	100	24	0	0	4.4	-1.5	0.6
74494	00	V	100	17	0	0	4.4	-1.4	0.6
74494	12	V	100	20	0	0	3.0	-1.0	1.3
78016	00	V	100	1	0	0	4.2	2.8	-4.3
78016	12	V	100	28	0	0	4.2	0.2	0.2

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: December, 1996

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	500	1	0	0	0.0	2.0	-4.1
DBBH	12	V	500	6	0	0	0.0	-3.3	0.4
DBLK	00	V	500	1	0	0	0.0	-3.3	-4.9
FNOR	00	V	500	14	0	0	7.1	-1.6	-2.0
FNOR	12	V	500	14	0	0	3.7	-2.3	0.5
FNOU	00	V	500	14	0	0	3.7	-0.5	-0.8
FNOU	12	V	500	17	0	0	3.8	-2.3	-0.5
FNPH	00	V	500	9	0	0	4.3	0.4	-0.7
FNPH	12	V	500	7	0	0	4.3	-3.4	0.5
FNRH	00	V	500	1	0	0	4.3	-0.4	3.3
FNRS	00	V	500	13	0	7	4.3	0.7	-0.4
FNRS	12	V	500	13	0	0	4.2	-3.1	0.2
JCCX	00	V	500	1	0	0	5.4	-0.8	0.4
JDWX	00	V	500	1	0	0	5.4	-3.7	-1.5
JIVB	00	V	500	1	0	0	5.4	-2.4	0.9
KCEJ	00	V	500	1	0	0	5.4	-4.5	3.2
LDWR	00	V	500	30	0	0	5.4	-0.9	0.3
LDWR	12	V	500	30	0	0	3.0	0.4	0.4
OXVH2	00	V	500	9	0	0	3.2	-2.6	0.5
OXVH2	12	V	500	6	0	0	3.2	1.1	-2.2
OXYH2	00	V	500	17	0	0	3.2	0.7	0.9
OXYH2	12	V	500	18	0	0	3.2	1.1	-0.4
SHIPS	00	V	500	7	0	0	4.1	0.3	-0.8
SHIPS	12	V	500	5	0	0	4.1	-1.4	0.4
V2EZ	00	V	500	8	0	0	4.1	2.9	0.1
V2EZ	12	V	500	12	0	0	4.1	-0.1	0.6
V2GH	00	V	500	12	0	0	4.4	0.5	0.7
V2GH	12	V	500	11	0	0	4.5	-0.2	-0.5
V2LV	00	V	500	29	0	0	4.2	2.1	0.0
V2LV	12	V	500	28	0	0	3.5	-0.8	-0.1
WTEU	00	V	500	1	0	0	3.0	2.7	0.1
03953	00	V	500	30	0	0	4.6	0.4	-0.8
03953	12	V	500	31	0	0	2.6	-0.4	-0.7
04018	00	V	500	29	0	0	3.7	2.0	0.1
04018	12	V	500	31	0	0	4.9	2.9	-0.6
04220	00	V	500	31	0	0	4.9	0.9	1.1
04220	12	V	500	30	0	0	4.6	0.7	0.4
04270	00	V	500	30	0	0	3.7	-0.3	0.0
04270	12	V	500	29	0	0	5.4	-0.4	0.6
04339	00	V	500	30	0	0	3.1	0.2	-0.5
04339	12	V	500	29	0	0	3.2	0.2	-0.1
04360	00	V	500	28	0	0	3.0	-0.4	-0.3
04360	12	V	500	30	0	3	4.3	-0.4	0.4
08001	00	V	500	28	0	0	5.2	-0.9	-1.4
08001	12	V	500	29	0	0	3.6	-0.8	-0.8
08508	00	V	500	29	0	0	4.7	-0.4	-0.3
08508	12	V	500	29	0	0	3.4	-1.4	-0.8
08522	00	V	500	1	0	0	4.9	7.3	-0.2
60020	00	V	500	29	0	0	2.9	-0.9	0.8
60020	12	V	500	29	0	0	3.2	-1.6	-0.6
71600	00	V	500	30	0	0	3.7	1.2	1.3
71600	12	V	500	31	0	0	4.2	0.6	0.5
72201	00	V	500	27	0	7	4.8	-0.6	-0.7
72201	12	V	500	27	0	7	2.9	-2.1	-0.4
72402	00	V	500	28	0	0	5.9	0.3	-0.5
72402	12	V	500	30	0	0	3.6	1.2	1.2
74494	00	V	500	30	0	0	3.5	-0.2	0.6
74494	12	V	500	30	0	0	3.9	-1.0	0.8
78016	00	V	500	1	0	0	3.4	1.1	-1.3
78016	12	V	500	28	0	3	3.4	1.2	1.4

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45